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## ORIGINAL LECTURES.

### ANEURISM OF THE AORTA.

*A Clinical Lecture.*

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GENTLEMEN: Within the last month we have had opportunities for studying the clinical features presented in two cases, both of which are believed to be suffering from thoracic aneurism. One, you will remember, is our own patient, the other man came from the service of Dr. Molson, who very kindly sent him to us for purposes of examination.

This man, whom you have seen almost daily for the last month, came to us from the throat department of the hospital, a department which frequently introduces to us our aneurism patients. The man is forty-four years old, a railway laborer, and it is very probable that he has had syphilis. At least, we cannot exclude syphilis from our consideration. He confesses to having had gonorrhœa and a soft chancre four years ago. As we cannot depend upon his differential diagnosis of chancre from chancroid, we cannot, therefore, assert that there is no history of syphilis.

The three points thus far given represent the three important factors in the production of aortic aneurism: 1, age; 2, occupation; 3, history of syphilis.

The age at which aneurism of the aorta usually appears is not that of youth, nor yet that of old age, but an intermediate stage; the time when a man is beginning to get structurally old, at the same time that, in a muscular sense, he is still young. The strain which the vessels can bear when they are young and elastic will cause them to stretch and break when they are old and less resilient. A potent agent in producing arterial degeneration is syphilis. Normal senile changes *plus* syphilis render an artery fragile long before its time. The patient is more conscious that he is becoming old, or that hard muscular work is not suited to him. The strain goes on, the weak artery offers less and less resistance to the blood-current, a stretching occurs which increases with greater or less rapidity until symptoms of pressure on neighboring organs begin to be apparent. The case is diagnosed, and the treatment, based on the knowledge of the causation, is instituted; symptoms are usually relieved, and the progressive enlargement of the aneurism is often arrested.

Aneurisms are caused either by local weakness of the arterial wall, or by repeated sudden increase in the blood-tension. Localized weakness in the arterial wall is caused by chronic endarteritis, but degeneration of any of the three coats produces a weakened condition of the wall which allows of its being forced outward by the heightened pressure within. The middle coat is the one

most commonly involved, and it is thought that in all cases this coat has given way. Syphilis produces an arteritis of the middle coat, hence the frequency with which a history of syphilis is met with in our aneurism cases. Increase in blood-pressure, which is sudden and repeated, is more dangerous than that which is steadily acting, for we do not often find aneurism in cases of a chronic nephritis where we know that there is increased blood-pressure. There are instances, too, where an aneurism is supposed to date from one particular strain, as, for example, in one of my cases where the patient attributed the disease to his effort in lifting a large lump of ice; and we know, too, that many patients say that their aneurism resulted from an injury. Thus a man who was in the hospital two years ago said that his aneurism was the result of the kick of a horse. I do not think the kick itself produced the aneurism, but it is probable that the effort made by the patient to avoid the injury caused a sudden increase of blood-tension which resulted in the initial bulging of the aorta.

The disease usually occurs amongst those who follow a laborious life, but this is not always the case. One of my patients had been a barber all his life, another a commercial man. I am inclined to think that the excessive use of the arms strongly predisposes. One of our hospital patients had been an instructor in sword exercise in the cavalry, and had worked a great deal as a chopper. That the disease is very common amongst soldiers is beyond doubt, but then it must be remembered that in soldiers a history of syphilis and alcoholism is very commonly met with. I doubt if it will be found amongst the soldiers who are serving on the present short service plan. The old-fashioned soldier was very fond of drink, seldom escaped venereal disease, and was kept in the ranks for a very long period, getting his discharge at a time of life when he was too old for the manual labor which remained as his only means of getting a living. Tight-fitting dress and accoutrements are also thought to have aided in the production of aneurism.

The favorite site of an aneurism is either in the ascending part of the arch of the aorta, or, more commonly, the junction of the ascending and the transverse portions of the arch.

Usually the walls of an aneurism are composed of the outer and inner coats of the vessel; the middle coat can be found, usually much thinned, just at the neck of the sac where it is continuous with the middle coat of the sound part of the artery. The fibrin deposited from the blood is generally found in layers on the inside of the aneurism deposited one upon another like the layers of an onion.

Our patient began eight months ago somewhat suddenly to suffer from difficulty in breathing after exertion, and whenever he attempted to undertake any heavy work the sensation of choking became so urgent that he

was obliged to desist. A cough came on at the same time, and he says that he brought up a great deal of phlegm. A thoracic aneurism produces by its pressure an irritative tracheitis, which often gives rise to a great deal of expectoration.

These symptoms were present for two months before any pain in the chest was experienced. There was pain continually present in the upper part of the chest, but it did not shoot into his arms at any time. This pain is not now so severe as it was, and it is noticeable in cases of aneurism that the pain is usually more severe at the outset of the disease. This can be accounted for by the fact that the pain is caused by pressure upon neighboring structures, which, at first, resent the presence of the encroaching swelling. After a time the parts accommodate themselves to the altered relationship of the thoracic contents. I well remember the case of a clerk, who, by the way, had been a soldier, and had had syphilis, in whom the pain resulting from a supposed innocent aneurism had been most intense, almost anginal. Here sudden relief was obtained by the forward dislocation of the right clavicle.

To return to our patient, he also complained that in swallowing he felt a sharp, smarting pain beneath the sternum, which was very much more severe whenever cold fluids were taken.

There has never been any haemoptysis. Latterly, the voice has been hoarse and the cough very troublesome. He applied for relief at the throat department, where Dr. Major discovered paralysis of the left vocal cord, diagnosed aneurism, and sent him to the wards for treatment.

To recapitulate: Here is a man of forty-four, a laborer, with a history of syphilis, who is suffering from a chronic affection, of which the symptoms distinctly complained of are: dyspnea on exertion, distressing cough, a suffocating sensation in his chest, severe continuous pain in the upper part of the chest, and dysphagia, symptoms pointing unmistakably in the direction of thoracic aneurism.

Before we had time to look into the history which the clinical clerk had carefully prepared, before we had time to examine his chest, he himself made a diagnosis. You will remember that, at a previous clinic, I immediately called the attention of the student, whom I had requested to examine the case, to the cough, and asked him if he noticed any striking peculiarity in it. That cough was distinctly the cough of aneurism, a loud ringing, more than ringing, a clanging cough, which was frequent, and came in paroxysms. It occurred several times in a few minutes, and was most distressing. I have known an aneurism to be diagnosed merely by that peculiar clanging cough heard through the thin partition separating the cabins in an ocean steamer.

Now for the appearance of the patient. He was by no means emaciated, and, but for the distressing attacks of coughing, one would suppose that he was in the most robust health. He told me, a few days ago, that he had failed to obtain any sympathy on account of his healthy appearance. Examining him closely you see that he is older than his years. His hair is very gray, and he might easily pass for a man not far from sixty. Now what evidences of aneurism can we make out before we give our attention to the physical examination of the chest?

First. *Aphonia*. He answers questions in a hoarse whisper, and attempts at speech bring on severe attacks of coughing.

Second. *Pain*. He says that he suffers from pain, both across and through the chest, sometimes dull, sometimes stabbing. This latter sensation is referred to a spot between the shoulders.

Third. *Dysphagia*, which has been constantly present for the last four months.

Fourth. The left pupil is smaller than the right.

Now, when he is stripped, we examine the chest very closely, and perceive no undue prominence upon any part of the chest-wall, and that the heart's apex is beating in its usual position. Palpation carries us several steps further in our diagnosis. We palpate behind the sternal notch, but there is no tumor to be felt there. We feel the trachea and find that at every beat of the heart the larynx is pulled down toward the sternum. More than that, if the forefinger be placed on the *pomum Adami* so as to exert gentle continuous pressure upward, the cardiac pulsations can be distinctly counted, and the number corresponds with that counted at the radial artery.

Percussion enables us to say that the extent of cardiac dulness is not enlarged. There is dulness over an area, bounded above by the clavicle, internally by the median line, externally by a line dropped from a point on the clavicle two inches to the left of the sterno-clavicular articulation, and below by the lower margin of the second rib. There is no dulness posteriorly.

The stethoscope fails to detect any abnormal heart-sound, but when it is placed over the dull area a marked systolic bruit is heard, and this bruit is intensified when the patient sits up. It is not audible in any other part of the chest. There is harshness of breathing all over both sides of the chest, but this is more marked on the left side. The pulse is 63 per minute, but on the left side it is almost imperceptible at the wrist.

Let us sum up now the symptoms and physical signs which our examination has afforded us: 1. Cough or dyspnea on exertion, with suffocative sensations in the chest. 2. Pain in the chest. 3. Dysphagia. 4. Discomfort on lying on the right side. 5. Contracted pupil on the side on which the tumor is supposed to exist. 6. Tracheal tugging. 7. Dulness on percussion over the part of the chest thought to be prominent. 8. Systolic bruit.

Can we locate the tumor? Remember what I have so often told you in the dissecting-room, that the transverse portion of the arch runs almost directly from before backward, and that the structures which are said to lie in front really lie at the left side of the arch. In this patient there is dulness at the left of the manubrium sterni; the aneurism is bulging in that direction. Possibly it presses upon the left phrenic nerve, but it lies between it and the soft lung, so that probably its function is not interfered with. Then the trunk of the left vagus may for the same reason escape, but its recurrent branch must appreciate even a slight change in the calibre of the arch, for it winds around it and takes its upward course between the arch and the trachea, two hard bodies which are very likely to squeeze it, as they undoubtedly do in this case. The respiratory sounds in the left lung and the large amount of expectoration with occasional bloody streaks, lead me to suppose that the left

apex is compressed. The parts at the right side (or posterior side) of the arch all give evidence that they are subject to pressure. Apart from hoarseness and cough there is evidence of pressure on the fork of the trachea or upon the bronchus by the presence of tracheal tugging, which is better marked in this case than in any I have seen. When this sign is present it means distinctly that the tumor is attached to the trachea or bronchus, and inasmuch as there is pulsation in it, it also means that consolidation has not been effected.

If you direct your attention to the relations of the esophagus you will see how pressure upon that collapsible tube is not readily brought to bear. It is between the trachea and the vertebral column, and would be likely to be pushed against the pleura of the opposite side of the chest if the aorta were to enlarge in that direction. Dysphagia is often absent in cases where a tumor even of considerable size occupies the chest.

The patient complained that he felt choked whenever he attempted to lie upon the right side. The reason for that is plain. The tumor lies to the left side of the trachea, and when he lies upon his right side the weight of the tumor comes upon his trachea and increases the pressure on the recurrent laryngeal nerve. The thoracic duct, which lies on the left front of the vertebral column, is a small tube, and likely to slip out of the way should the aorta enlarge so as to squeeze it against the spinal column. Lastly, you must bear in mind that the upper part of the thorax is very narrow from before backward. There are not two inches between the top of the sternum and the spine. A tumor as large as a hen's egg would exert pressure both on the sternum and on the vertebrae and adjacent ribs.

## ORIGINAL ARTICLES.

### TREATMENT OF TUBERCULOSIS.

BY J. LEWIS SMITH, M.D.,  
OF NEW YORK.

(Concluded from p. 651, Vol. IV.)

*Curative Treatment.*—It has long been the belief in the profession, as well as among the laity, that tuberculosis is in the end, with few exceptions, fatal, whatever remedial measures are employed; and that, therefore, remedies may ameliorate symptoms, but do not change the result. But since attention has been directed to this subject, a sufficient number of observations have been made to show that tuberculosis, at an early stage, can in a large proportion of cases be cured or rendered latent. The late Professor Austin Flint, in his treatise on *Phthisis*, published in 1875, stated that of 670 phthisical cases which came under his observation, he ascertained by auscultation and percussion that the disease had been cured in 44, and was non-progressive in 31 others. But the most convincing proof of the curability of tuberculosis is furnished by the post-mortem examination of those who have died of other diseases. A cretaceous or fibroid state of the apex of the lung, without tubercles elsewhere, may be regarded as

certain evidence of arrested tuberculosis. Now, two of the curators of large New York hospitals inform me that they frequently find cretaceous or fibroid degeneration at the apex of the lung without tubercles elsewhere, in the autopsies in these institutions. One of these gentlemen, whose examinations are in the dead-house of Bellevue Hospital, states that this evidence of arrested tuberculosis is present in at least one-fourth of the cadavers which he examines, and the Bellevue Hospital patients come from the most crowded and insalubrious tenement houses of the city and have led a life of poverty and privation, and frequently of dissipation. The London *Lancet*, September 22, 1888, states that M. Vibert has examined the records of the necropsies in the Paris morgue, and that in 131 subjects whose death had been sudden from violence or acute diseases, the lesions of pulmonary tuberculosis were present in 25, and in 17 of these the tubercles had undergone the cretaceous or fibroid change, and were practically cured. It is certain, therefore, that tuberculosis of the adult in its commencement, and when affecting only a small portion of the lung, is often cured or rendered permanently latent.

Professor Prudden, of the Laboratory of the College of Physicians and Surgeons, informs me that ordinary serum circulating in the bloodvessels possesses marked germicidal properties, and therefore measures which benefit the general health and improve the quality of this important constituent of the blood, have a curative effect as regards tuberculosis. The tubercle bacillus is an irritant to the tissues, and in cases which are cured or rendered latent it becomes surrounded by dense tissue, which in time undergoes the cretaceous or fibroid degeneration. The bacilli in the interior of the mass may retain their vitality for an indefinite time, but being encapsulated they do no harm. There can be no doubt that many adults have local tuberculosis, and are cured by improvement in their general health and in the quality of their blood, without suspecting that they have had this disease. In young children, especially in infants, tubercles are frequently disseminated in the organs, and recovery under such circumstances must be impossible or rare; but local tuberculosis or tuberculosis limited to certain glands, as the bronchial, is not unusual in childhood, and this form of the tubercular disease may be cured by measures which improve the general health.

The indications of treatment of tuberculosis are twofold: first, to invigorate the system in every possible way, so that the organs and tissues are in a better condition to resist the bacillus and the serum to antagonize and destroy it; and, secondly, the employment of medicinal agents, if such can be found, which are destructive to the bacillus and safe to the patient.

Measures designed to improve the general health must be chiefly hygienic, and are described in all the text-books. The diet should consist of milk, the meat preparations, and farinaceous substances, prepared in such a way that they afford the maximum amount of nutriment and are easily digested. If the digestion be poor, peptonized food may be advantageously employed, and pepsin may be taken with the food. In 1881-82 Debove recommended gavage or forced feeding of consumptives through a flexible rubber tube, having a funnel attachment, the tube being introduced into the stomach. He employed meat preparations, with pepsin. In THE MEDICAL NEWS, October 1, 1887, Dr. S. Solis-Cohen, of Philadelphia, also recommended gavage in the treatment of phthisis. A quart of milk, two tablespoonfuls of beef powder, three eggs, fifteen grains of scale pepsin, and thirty drops of dilute muriatic acid were warmed and administered twice daily through a stomach tube, a patient eating what he wished in the interval. Gavage has been employed by certain European physicians in the treatment of children suffering from various forms of innutrition, and it seems probable that tubercular patients may be benefited by it in some instances. In the ordinary mode of feeding, the predigested foods can often be used with benefit by consumptives, inasmuch as they have, for the most part, feeble digestion.

As regards the hygienic measures designed to arrest tuberculosis, the most important, next to the use of proper food and the employment of such aids to nutrition as cod-liver oil and the alcoholic preparations, is outdoor life, and, if possible, in localities having a high altitude. The late Professor Flint, in examining the records of 62 cases of arrested phthisis which came under his observation, ascertained that the principal agent in effecting this result was exercise in the open air. He therefore strongly recommended this mode of life to consumptives, and also constant ventilation of their sleeping apartments, even in the winter season, the danger of taking cold being averted by maintaining sufficient warmth of air by a fire. Dr. James Blake has also reported instances of recovery of phthisical patients who lived, during the five or six months of the dry season, in the open air upon the coast range of mountains in California at an altitude of 3000 to 5000 feet. These patients were in the open air night and day, without even the protection of tents.

*Residence at a High Altitude.*—The London *Lancet*, May 26, 1888, contains the abstract of a paper read before the Medico-Chirurgical Society of London by Dr. Williams, recommending residence at a high altitude as an efficient means of checking the progress of tuberculosis. He states that of 141

patients who had employed the high altitude treatment, 14.13 per cent. were completely cured, 29.78 per cent. were much benefited, 11.34 per cent. were more or less benefited, and 17.02 per cent., including 13.47 per cent. who died, continued to grow worse. Drs. Quain and Pollock, in discussing this paper, expressed the opinion that consumptives who improve at high altitudes, improve equally with the same treatment at lower elevations; in other words, that residence at a high altitude does not influence the result. Brehmer, on the other hand, believes that the inhabitants have immunity from tuberculosis at an altitude of 1500 feet in Germany, of 4500 to 5000 feet in Switzerland, and 10,000 to 15,000 feet at the equator (*Die Therapie Chronische Lungenbeschwerden*, Wiesb., 1887). The most apparent and notable peculiarity in the air at high elevations, apart from its purity, is its rarefaction. At an altitude of 9000 feet above the level of the sea, it is said from observations made, that the air is so rarefied that three times the usual exercise of the lungs is required to meet the demands of the system. Dr. Mays states in a paper published in THE MEDICAL NEWS, November 27, 1886, that the Quichua Indians, on the lofty plateaus of Peru, constantly breathing a rarefied air, "acquire enormous dimensions" of the chest, due to an increase in the size and perhaps number of the air cells. More numerous and more exact observations are required in order to determine whether, or to what extent, residence at a high altitude is beneficial to consumptives, and if it exerts a controlling effect on the disease, whether this result is due to the increased pulmonary expansion and activity or to other causes. Certainly, from observations already made, we are justified in recommending outdoor life in a mild and equable climate, and also residence at high elevations if the cold is not too severe.

*Residence in the Evergreen Forests, and the Use of Turpentine.*—In an interesting paper read before one of the societies, and subsequently published, Dr. A. L. Loomis states his belief that the terebinthinate vapors in the evergreen forests possess healing properties for consumptives. He quotes the statement of Ringer that turpentine employed as a medicine enters the blood, and may be detected in the breath, the perspiration, and in an altered form in the urine of the patient. The presence of the vapor of turpentine in the pine forests, Dr. Loomis remarks, cannot be doubted, and its "local and constitutional effects," he adds, "are those of a powerful germicide as well as stimulant." Dr. Loomis quotes the opinion of Mr. Kingsett that turpentine, during its oxidation, evolves the peroxide of hydrogen, and therefore by the "oxidation of the terebinthlates, there is produced in extensive pine forests an almost illimitable amount of peroxide of hydrogen, which

renders the atmospheres of such forests antiseptic." He believes that the peroxide of hydrogen so abundantly produced in pine forests "successfully arrests putrefactive processes and septic poisoning," and therefore he recommends residence in the pine forests as one of the most efficient means of relieving the symptoms of tuberculosis and retarding the progress of this fatal malady. At high altitudes, the coniferous or evergreen trees usually predominate, and if the views of Professor Loomis be substantiated by future investigations, it may be that the benefit believed to be obtained by consumptives at high elevations is partly due to the exhalations from these trees.

The bacteriologists who have cultivated the tubercle bacillus, and observed the action upon it of the various agents which have been employed and extolled by clinical observers, state that most of these agents do not penetrate the tubercular mass; that while they may destroy the superficial bacilli, they do not affect those more deeply seated, and therefore fail to arrest the disease. But turpentine and its derivatives appear to penetrate the tissues as deeply as almost any other agent, and therefore if they are sufficiently antiseptic and not too irritating, we may expect good results from their judicious use. But it is probable that they are less efficient as germicides than some of the other agents which can be safely employed, and therefore should be recommended only as adjuvants, or as remedies which may give some relief to the catarrhal and other symptoms without exerting any marked antiseptic action. Hohnfeld states that he applied oil of turpentine to fresh colonies of the micrococcus prodigiosus and staphylococcus aureus, and that it exerted little destructive or retarding effect on these microorganisms.<sup>1</sup> These experiments would lead us to distrust the germicide action of turpentine and the terebinthinate preparations in tuberculosis, for the tubercle bacillus is tenacious of life beyond most other microbes. But the alleged good results of teaspoonful doses of the oil of turpentine in that other fatal microbial disease, diphtheria, certainly justify the experimental use of this agent in tuberculosis.

Terebene, produced by the action of gaseous hydrochloric acid on turpentine, has been prescribed in tuberculosis and chronic bronchial catarrhs, with some apparent benefit. An adult should take ten increased to twenty drops three times daily. A child can take a dose proportionate to the age. The following formula has been recommended:

R.—Terebene . . . . .	3iv.
Pulv. acacie . . . . .	3ij.
Aque . . . . .	3ij.
Syr. zingiberis . . . . .	3j.—M.
Dose, one teaspoonful.	

<sup>1</sup> Fortschritte der Medicin, October 1, 1887.

Terebene can also be employed by inhalation from Robinson's inhaler, or, properly diluted, from the hand or steam atomizer. It has been administered in ten drop doses to some of the consumptives in my wards in the Charity Hospital, and the resident physician who had charge of these cases writes to me as follows

"I am satisfied that in nearly all cases of dyspnea it is of value. In some it affords marked relief, and I have had patients tell me that it gave the most relief of anything. Others say that it afforded some relief. It makes expectoration in some patients markedly more easy, and the sputum much thinner; in others the effect is only slight or moderate."

It probably aids in relieving the catarrh which accompanies tuberculosis.

*Hot Air Inhalations.*—Halter states that workers in a limekiln, breathing dry air at a temperature of 122° to 156° F., were exempt from phthisis during a period of fifteen years, in a locality where this disease was common. He also states that the most favorable temperature for the growth of the bacilli is 98.6° to 104° F., and that a temperature of 105.8° destroys them. Moreover, his experiments have shown him that the inhalation of dry air at a temperature of 248° to 256° raises the temperature of the expired air to about 109.7°, a degree of heat which, he says, is fatal to the bacillus.<sup>1</sup> Dr. E. Krull states that for more than two years he has treated consumptives with the inhalation of hot air heated to 132° F., and that this raised the temperature of the expired air to not less than 107.6°, and incipient cases seemed to derive benefit from this treatment. Dr. Weigert, of Berlin, has constructed an apparatus for the inhalation of hot air, which was employed for a time in the wards of Charity Hospital, but it did not seem to give as much relief as the antiseptic inhalations which have been used by the same patients.

Dr. Trudeau, of Saranac Lake, prescribed the hot air treatment in four cases, four hours each day, the temperature of the inhaled air being 392° F. The first and second patients improved slightly at first, but refused the treatment, the one after one month, and the other after six weeks. The third patient was treated three months without the least appreciable effect. The fourth patient was treated four months, with manifest improvement in her physical signs and general health, but no more improvement than frequently occurs from any new mode of treatment. In all the cases the sputum was examined before, during, and after the treatment, and in every examination the tubercle bacillus was present. The result claimed for the hot air treatment had not been obtained—that is, the destruction of the bacilli; and if they are not destroyed in the sputum, certainly they are not in the tissue of the lung. Therefore

<sup>1</sup> Berliner klinische Wochenschrift, September 3, 1888.

there can be little doubt that the hot air inhalations, so far from coming into general use, will be discarded, not only because they are unpleasant to the patient but are inefficient. There is always a large amount of residual air in the alveoli, and there can be little doubt that in the hot air inhalations the air in the alveoli and terminal bronchial tubes never attains the elevation of temperature of the air that is inhaled, nor of that which is exhaled. Moreover, as we have seen, the tubercle bacillus resists the destructive action of high temperature. It is said to retain its vitality in liquids which have been twice heated to the boiling point.

*Creasote.*—Of the many medicines which have been recently employed in the treatment of tuberculosis, creasote appears to have given more general satisfaction than any other. I am informed that the late Dr. Cammann, the inventor of the binaural stethoscope, employed it twenty years ago in the treatment of tuberculosis, but it was seldom prescribed for this disease until within the last decade. In the *Berliner klinische Wochenschrift*, July 20, 1886, von Brunn states that he has treated 1700 phthisical patients in the last eight years with creasote, giving to adults not less than six to eight drops in twenty-four hours. He employed it in solution with tincture of gentian and wine, and believes that he obtained good results, especially in acute unilateral cases. Professor Sommerbrodt states<sup>1</sup> that he employed creasote in about 5000 phthisical cases during the preceding nine years. At first he used Bouchard's solution of creasote, and afterward gelatine capsules, each containing three-fourths of a grain of creasote and three minimis of the balsam of Tolu. The amount of creasote administered daily to the patients who were adults was increased gradually from one capsule to not less than nine. As many as 600 to 2000 capsules were given to each patient without a break. In many cases the improvement was marked, not only in the symptoms and in the general health but also in the physical signs. He believes that he has cured cases by insisting on a continuance of the treatment. To show the good effects of creasote, he cites the case of a student of sixteen years, with tuberculosis of the right lung, who took three capsules three times daily, or about seven and a half grains per diem. His cough abated, his weight increased six pounds in two months, his expectoration had ceased. Instead of the dull percussion sound over the apex of the right lung, only a slight rhonchus was observed and his general health had greatly improved.

Many others who have employed creasote during the last two or three years, both in this country and in Europe, report favorable results. Strümpell says that it produces no ill effects, and in large

doses it frequently causes improvement in such symptoms as the cough, expectoration, and appetite, but he doubts whether it exerts any marked curative effect upon the disease. It has been employed during the last year in Charity Hospital, and the resident physician who had charge of the ward in which it was used writes to me that it "Seems to possess some staying influence over the progress of the disease." In the New York Foundling Asylum creasote in cod-liver oil has been administered during the last year to the few phthisical patients under treatment in doses of one drop three or four times daily to children of three or four years, and Dr. Lynde, the resident physician, thinks that it has been the most useful of the remedies employed.

During the past year, I have prescribed creasote for internal use in the following formula:

R.—Creasoti (Morson's) }  
Spiriti chloroformi } . . . aa 3ss.—M.  
Alcoholis }

Dose for an adult, nine drops three times daily in half a teacupful of water containing a tablespoonful of brandy or two tablespoonfuls of wine. The nine drops of the mixture, containing three of the creasote, have been increased to twelve drops, or four of creasote, and, thus far in my practice, patients believe that they have been benefited by this remedy, and have desired to continue it. At the same time, in some instances, I have recommended the inhalation of ten or fifteen drops of the same mixture from Robinson's inhaler. This dose of creasote, three or four drops, may seem large, but it is tolerated when sufficiently diluted, though it may be best to commence with a smaller quantity. Children should, of course, take doses proportionate to the age, the fractional part of a drop being sufficient for infants. Creasote has also been injected into the tubercular lung through the chest-walls by several physicians, a syringe provided with a long and delicate needle being used. Rosenbusch injected eight drops of a three per cent. solution of creasote in almond oil in two places at the seat of the disease, or sixteen drops in all. The result was a marked diminution of the cough, the sweats, the amount of sputum, and, in recent cases, an increase in weight. The beech creasote was used, and the skin and apparatus were first sterilized by an anti-septic lotion. When the instrument was not introduced deeply enough, a sharp, pleuritic pain sometimes occurred, but it soon abated. Creasote appears to be the most valuable of the recent remedies recommended for tuberculosis, but in order to determine its exact value, the proper mode of employing it, and the size and frequency of the dose, more extended observations are required. Fräntzel says that experiments have shown that this substance is inimical to the growth of the bacillus when min-

<sup>1</sup> Medical Chronicle, July, 1887.

gled in minute quantity with a gelatin culture-medium, and on this fact is based its internal administration. When it is injected into the lungs through the chest-walls, Dr. E. G. Janeway, of New York, believes that it is very important that the almond oil or other vehicle employed should be first sterilized.

*Iodoform.*—This agent, dissolved in ether and inhaled, has been recommended. It apparently gives some relief to the cough, and possibly to other symptoms, but the belief that it is destructive to the bacillus has been shown to be fallacious by the experiments of Roosing, who inoculated the eye of a rabbit with tubercular matter mixed with iodoform, and the iodoform did not prevent or retard, but apparently accelerated the development of tubercle at the point of inoculation by its irritating effect upon the eye.<sup>1</sup> Iodoform cannot, therefore, be recommended as a curative agent in tuberculosis.

*Biniodide of Mercury, Corrosive Sublimate.*—Miguel and Rueff employed a solution of biniodide of mercury, 1 part to 40,000, as a germicide spray in tuberculosis. They state that of twenty-seven patients treated by this spray, nineteen improved, and the remaining eight were neither made better nor worse. It is unfortunate that the results of treatment by the biniodide, as observed by these physicians, were not stated more in detail. If they relied entirely on the opinions of the patients, they may have been deceived, for patients with chronic diseases often believe for a time that they are benefited by new modes of treatment, when there is no actual improvement.

The fact that corrosive sublimate employed internally and locally in the treatment of diphtheria has the confidence of the profession as an efficient germicide, suggests its use in the treatment of other microbial maladies. Moreover, its use in diphtheria has shown us what doses of this powerful agent can be safely prescribed. I am not aware that corrosive sublimate has been employed internally in the treatment of tubercular patients, but it has been used as a spray. In the Charity Hospital, several of the patients inhaled from the atomizer one teaspoonful of an aqueous solution of corrosive sublimate, two grains to the pint, every three to six hours, and both the patients and house-physicians believe that it acts beneficially in relieving symptoms, especially the cough. It cannot be doubted that the spray employed as often as every third hour disinfects the sputum to a great extent, and destroys the bacilli upon the surface of the larynx, bronchial tubes, and in the alveoli, but whether benefit may accrue to consumptives from its internal use we have not sufficient data for determining.

Another medicine which has been considerably

employed in Europe, and in regard to which opposite opinions are expressed, is hydrofluoric acid. MM. Seiler and Garcin, of Paris, detailed the results of their use of this agent in a paper published in 1887 in the *Bulletin de l'Académie de Médecine*. They state that of 100 tubercular patients treated by hydrofluoric acid, 35 were cured, 41 exhibited more or less improvement in symptoms, 14 were not benefited, and 10 died. They state that in the favorable cases rapid improvement was observed in the symptoms, such as the fever, night-sweats, dyspnea, and expectoration. Giacomi, of Berne, employed a mixture of 100 grammes of hydrofluoric acid with 300 grammes of water in a vessel over a spirit-lamp. Eight patients inhaled the vapor one hour each day. In one, marked relief occurred; in another some temporary improvement took place as regards the appetite and dyspnea, but in the remaining six the result was negative. No discomfort resulted from the inhalation, though from the well-known action of hydrofluoric acid the window panes became more or less opaque. Gager has treated seventeen cases with the vapor of hydrofluoric acid with the following result: In five the bacilli disappeared from the sputum and the auscultatory signs improved in a marked degree; in seven some improvement in the physical signs occurred; in twelve the weight increased; in five cases no result.<sup>1</sup> Grancher and Chautard experimented with hydrofluoric acid on rabbits, and they express the opinion that the vapor of this agent does not penetrate sufficiently to destroy bacilli in the depth of the tissues. Trudeau states that the vapor of hydrofluoric acid is efficient as an antiseptic, and seems to possess greater penetrability than the ordinary antiseptic sprays, but it can only destroy those bacilli with which the inhaled vapor comes in contact; therefore, the bacilli imbedded in tubercular nodules and the tissues escape.<sup>2</sup> Professor Jaccoud inoculated guinea-pigs with tubercular sputum which had been subjected to the action of hydrofluoric acid, and produced tuberculosis with this sputum as certainly as with sputum not thus treated. From these experiments, and others performed under his direction, Jaccoud believes that the vapor of hydrofluoric acid, employed in any safe manner, does not destroy the tubercle bacillus or notably diminish its virulence.<sup>3</sup> Therefore, the good effects from the use of this medicine, claimed for it by those who first employed it, have not been realized in the practice of more recent observers, so that we cannot recommend its employment in the place of remedies which have produced more favorable results.

*Rectal Injections of Sulphuretted Hydrogen.*—This treatment was first employed by Dr. Bergeon, of

<sup>1</sup> Deutsche medicinische Wochenschrift, 1888, p. 597.

<sup>2</sup> THE MEDICAL NEWS, May 5, 1888.

<sup>3</sup> London Lancet, November 10, 1888.

Lyons, and being highly recommended by him, has been prescribed by many physicians in Europe and America. Its real value has now been apparently fully ascertained. The history of its use is instructive, since it shows how a mode of treatment which is inert may gain the confidence of intelligent physicians. The *British Medical Journal*, May 21, 1887, states that Dr. S. Cayhill, of the Isle of Wight, has employed Bergeon's treatment in private and hospital practice with the most encouraging results. He believes it is the greatest advance ever made in the therapeutics of pulmonary diseases. Dr. Henry Bennet also notices favorably Bergeon's treatment in the same journal for December, 1886. The late Dr. Bruen, of the University of Pennsylvania, treated 25 cases by Bergeon's method, employing twice daily from three quarts to a gallon of the gas slowly introduced. In nearly all the cases the night-sweats ceased, the cough, expectoration, and frequency of the pulse diminished, and the temperature fell half a degree to one degree.

On the other hand, Drs. Shattuck and Jackson, of Boston, employed Bergeon's treatment in 7 cases. No odor of the gas could be detected in the breath of these patients after its use, and paper moistened with a solution of the acetate of lead was not blackened when held before the mouth. The only result which might be attributed to the enemata was some diminution in the expectoration. Professor Austin Flint has made experiments in order to determine whether sulphuretted hydrogen introduced per rectum or by subcutaneous injection enters the lungs. He tested the expired air by holding before the mouth white filter paper moistened with a solution of acetate of lead. He ascertained that sulphuretted hydrogen was not exhaled at all, or was exhaled in small quantity, and for a period not exceeding three minutes. The presumption is, therefore, strong that sulphuretted hydrogen employed per rectum or subcutaneously, in some instances does not enter the lungs, and in other instances enters them in small quantity and is quickly expelled. Dr. Grauer placed cultures of the tubercle bacillus, as well as of other pathogenic germs in test-tubes, and subjected them to a current of sulphuretted hydrogen from two hours to a longer time, and yet their vitality was preserved, so that successful inoculations or cultures were produced. Dr. E. C. Trudeau, of Saranac Lake, says that in May, 1887, a tube containing a pure culture of the tubercle bacillus was subjected for thirty minutes to a stream of undiluted sulphuretted hydrogen made from sulphide of iron and sulphuric acid. The conducting tube was pushed through the cotton and held within half an inch of the coagulated serum, and the jet of gas allowed to play freely on the bacilli upon its surface. The entire mass soon became so blackened by the action of the sulphur as

to resemble dark-gray paint. The microbes thus treated were then mixed with sterilized water and injected into the pleural cavities of two full-grown rabbits. These animals were then placed in a large box, well fed, and kept under a shed in the open air all summer. On October 19th, 162 days after the inoculation, both rabbits died within two hours of each other, and both were found to have cheesy bronchial glands and advanced pulmonary tuberculosis. The benefit, therefore, supposed by some to be derived from Bergeon's treatment, is probably due to hygienic measures.

*Sulphurous Acid.*—Dr. Dariex, in a monograph published in the *Bulletin Général de Thérapeutique*, February 29, 1888, states that Galen, in the second century, recommended the sulphurous air of volcanoes for consumptives. In recent times attention has been drawn to the beneficial effects of the inhalation of sulphurous vapors in tuberculosis by M. Salland, an army surgeon. A sergeant having this disease, which was progressing notwithstanding active medication, was placed in charge of the rooms in the barracks in which sulphur was burned for disinfecting purposes. This service obliged him to pass nine hours each day in a sulphurous atmosphere. At the end of sixty-five days he was cured. M. Auriol having observed the good effect of the inhalation of sulphurous acid upon certain consumptives, whose occupation compelled them to live in an atmosphere charged with this gas, fitted up a room for the treatment of this disease. The flowers of sulphur, slightly moistened with alcohol, was burnt in the corner of the room. Soon the patient began to have paroxysms of coughing, but he did not leave the room until moistened test-paper began to redden; if the respiration was much oppressed he left the room sooner or the window was opened. In order to render the vapor less irritating, and the paroxysms of coughing less severe, a little benzoin or powdered opium was added to the sulphur. These inhalations were practised morning and evening, the patient fasting, and afterward exercising in the open air. Appropriate medication, according to the symptoms, completed the treatment. Seventy patients, at different stages of tuberculosis, were subjected by M. Auriol to the inhalation of the sulphur vapor. Their sputa, previously examined, contained bacilli, and, inoculated in the guinea-pig, caused phthisis in a short time. Thirty of these patients, who were in incipient tuberculosis, obtained an arrest of the progress of the disease, disappearance of the fever and sweats, return of the appetite and increase in weight. The bacilli disappeared from the sputum. M. Auriol believes that these cases are cured, since the improvement has continued more than two years. The tubercles, he thinks, are transformed into fibrous tissue. Twenty others of the seventy tuber-

cular cases did not have this treatment long enough to determine its value, or received it in an irregular manner. Nevertheless, they stated that they derived benefit from it. The remaining 20 had general tuberculosis and succumbed to the disease. M. Auriol employed sulphurous acid in the treatment of guinea-pigs that were rendered tuberculous by inoculation. They improved in flesh and weight, and in those that were killed a considerable time afterward, the tubercular nodules were found to be transformed wholly or chiefly into fibrous tissue.

M. Dujardin-Beaumetz has constructed a very ingenious and simple lamp for producing sulphurous acid by burning the bisulphide of carbon. This produces 111.3 volumes of carbonic acid and 141.4 volumes of sulphurous acid. The carbonic acid does not seem to produce any injurious effect, but, on the other hand, its anaesthetic action increases the tolerance and diminishes the irritation of the sulphurous acid. The *Bulletin Général de Thérapeutique*, February 29, 1888, contains a full description of Dujardin-Beaumetz's apparatus, which is too lengthy for insertion here.

I have described in the foregoing pages the most important of the remedies which have been recently recommended by apparently competent observers. There are others, which, from their nature and the limited trial which they have received, I have not thought of sufficient importance to require notice. Most of them will probably soon be discarded by those who now recommend them. The hygienic measures—as outdoor life, residence at a high altitude, free ventilation of sleeping apartment, and the use of the most nutritious and easily digested food—still maintain a most important place in the treatment of tuberculosis. Of the medicines, creasote used internally and by inhalation, the inhalation of sulphurous acid vapor, not carried to the extent of irritating the air-passages, and the use of germicide sprays, as of corrosive sublimate, the terebinthinate vapors, etc., appear to be the most deserving of recommendation. But no doubt the next ten years will witness important changes in the treatment of tuberculosis, based on its microbic nature, and probably remedies not now heard of will come into use.

#### A CASE OF ECTOPIC GESTATION WITHOUT CHARACTERISTIC SYMPTOMS.

BY J. M. BALDY, M.D.  
OF PHILADELPHIA.

THE following case is reported because it well illustrates some points in the much disputed question of the diagnosis of early ectopic gestation :

F. C., age twenty-four years; white; married for nine years. Has had two children and no miscarriage. The last pregnancy was six or seven years ago. After this labor she was in bed for eight weeks with a

"sore and swollen belly," and since then she has never been free from pelvic and abdominal pain. Her menstruation has been regular but very profuse, lasting eight or nine days. In the interim between her first illness (following the birth of her child) and the present, she had an attack of abdominal pain, which confined her to bed for a week or more.

On November 15, 1889, she came to me stating that her regular menstruation had come on five weeks previously, and that she had been bleeding more or less ever since; the constant pain she had been having had become worse. She had the appearance of a very sick woman, her temperature was elevated, her pulse quick, and she was having chills and "creeps." An examination of the pelvis showed the uterus in fair position and of normal size. There were irregular cystic masses on each side, the largest being on the right. The necessary manipulation gave her much pain. A diagnosis of chronic double pyosalpinx, with an acute attack of pelvic peritonitis, was made, and an operation for the removal of the tubes was advised. She was admitted to the woman's ward of the Howard Hospital, and an operation made on November 21st. From the right side a tubal pregnancy was removed, which had advanced to about the sixth or seventh week; from the left side an ovarian cyst the size of a hen's egg.

The results of the operation were a complete surprise to me. My diagnosis of pyosalpinx—which was concurred in by my friend Dr. Bradford—was made with the utmost confidence, and we had not the slightest doubt that it would prove to be such. An ectopic gestation never entered into consideration. As soon as the patient was well enough I questioned her closely to see wherein I was at fault in my conclusions. A most careful questioning of her disclosed the following facts :

At no time during the past year had she missed a menstrual period, nor had there been a scant or delayed one. At no time had she had any signs of pregnancy, such as she suffered from when she was previously impregnated. In fact, she does not even now believe that she was pregnant, basing this scepticism on the absence of a missed period and the early signs of pregnancy. Her breasts were of the normal size, the areolæ were not enlarged or changed in color, there was no tingling or itching about the breast, though they contained a small quantity of milk. However, she states that such had been their condition since the birth of her last child. There was no deciduous discharge. The only thing she passed besides blood was a piece of whitish matter, such as she was in the habit of passing at the end of each menstrual period. This point has been most carefully inquired into, and she answers very intelligently. In addition to her statements, we have those of a careful trained nurse. The patient was in the hospital for two or three days before the operation, bleeding constantly. The nurse declares that the napkins were soiled with a discharge entirely free from clots or shreds. Stomach symptoms were entirely wanting. The

pains were, according to her statement, not different from those she had with her previous attack of probable pelvic peritonitis.<sup>1</sup>

In the local examination there had not been noted any discoloration of the vagina, and the uterus was found to be of normal size. At the time of the operation, before I had discovered that I was dealing with an ectopic gestation, as I played my fingers around the uterus, I remarked that it was of natural size. The sensation conveyed to my finger, while palpating the lateral cystic masses through the vagina, was most remarkably like what I have felt in some pyosalpinx cases. In addition to all this, there were an elevated temperature, flashes of heat, and chilly sensations, all pointing to pus.

What symptoms, then, had we of extra-uterine pregnancy? Bleeding for five weeks, and pain, together with a period of six or seven years' sterility. All the other symptoms described as common to this disease were absent. The question arises, Could the correct diagnosis have been made on these data? I think not. The bleeding could easily be accounted for by the pelvic disease and the peritonitis which existed; and, as a matter of fact, she was in the habit of bleeding profusely at every period, and on a previous occasion, when she had a probable pelvic peritonitis, she bled irregularly for some weeks. The pain I believe to be the most valuable sign of ectopic gestation, it being, as a rule, of a character almost peculiar to itself. Here, however, I was not given the opportunity to see her in a typical spasm, and her own statement is that they differed from her old ones merely in degree, and in assuming, at times, a more cramp-like character. This, however, I only obtained from her after the operation, her statement before operation being that there was no difference. The combination of pain, sterility, and irregular, profuse bleeding is so common in pelvic inflammatory troubles that nothing unusual could be suspected from them alone. On the other hand, the previous history, the pelvic examination, especially the double nature of the affection, the elevated temperature, the chills, the evident chronic nature of the trouble with the acute attack of pelvic peritonitis supervening, all pointed almost conclusively to pyosalpinx. One more point might be added—she had lost flesh quite rapidly in the past five weeks.

To be doubly sure that the right tube contained an impregnated ovum, I took the specimen to Dr. George A. Piersol, of the University of Pennsylvania. After a microscopical examination which displayed the chorion villi most beautifully, he pronounced it an undoubted specimen of extra-uterine pregnancy.

<sup>1</sup> The patient was seen within the past ten days. The incision and tube tract are entirely closed. She has no pain, is quite fat, has a splendid appetite, and sleeps well. She occasionally spits a little blood.

Her recovery was complicated about the third day by a pneumonia (whether from the ether, from unavoidable exposure, from both or from neither, I am unable to say), and later by the drainage track becoming infected. Her convalescence was slow and incomplete. She left the hospital with the pulmonary trouble still hanging on. Later, she appeared at the out-patient department spitting bloody mucus. She was induced to enter the Pennsylvania Hospital, but became discontented and would not stay.

The points to which I would particularly call attention are:

*First.* That this was an unruptured or primary tubal pregnancy. (This is the second one of the kind I have had.)

*Second.* That there was no missed or scanty menstrual period.

*Third.* That there was no decidual discharge.

*Fourth.* That there were no breast or stomach symptoms, or other signs of pregnancy.

*Fifth.* That the woman did not think she was pregnant.

*Sixth.* That the uterus was of normal size.

*Seventh.* That the character of the pain was not markedly distinctive.

*Eighth.* That there was a tubal pregnancy on one side and an ovarian cyst on the other.

The case is one more illustration of the impossibility of an accurate diagnosis in ectopic gestation, and of how such a condition can exist without showing enough symptoms to cause even a suspicion of its existence.

328 SOUTH SEVENTEENTH STREET.

#### REMARKS UPON EMPYEMA.<sup>1</sup>

BY MARY PUTNAM JACOBI, M.D.,  
OF NEW YORK.

(Concluded from page 122.)

THE use of a valve in the dressing of the empyemic fistula has received much less attention than it deserves. The elaborate valvular apparatus described by Phelps, in 1880,<sup>2</sup> does not seem to have been employed by any one else. It necessitates a double opening in the chest, and is otherwise too complicated for general use. When a valve of *bandruche* was used around the trocar, in the French method of operating which preceded the antiseptic, no arrangement was made for keeping up a valve action by the dressings. Dr. Cabot, in his paper of 1880, is the first writer I know of who has perceived the desirability of a valve. He recommends, however, to utilize the mackintosh of the Lister dressing for this purpose, allowing it to over-

<sup>1</sup> Read before the New York Academy of Medicine, Section on Pediatrics, November, 1889.

<sup>2</sup> New York Med. Record, 1880.

lap the gauze upon the skin, instead of, as is usual, falling short of the dimensions of the gauze. It seemed to me that this same idea could be more effectively carried out by placing a piece of rubber tissue, the size of my palm, directly over the opening, upon the skin and under the dressing. The piece of rubber was, of course, previously soaked in a bichloride solution. After the conclusion of my case, I found that Bouveret has advised a similar valve to be placed directly over the fistula, but this to be attached to the upper border by collodion, and left free below. My thin layer of rubber tissue, as soon as it was *in situ*, became closely applied to the skin by atmospheric pressure.

On the first dressing a valve had been imperfectly applied, and continued to be so until the eleventh day. Up to this time air was always drawn into the lung as soon as the dressing was removed. On the eleventh day a better valve was made of thin rubber tissue, and a week later, when the discharge had almost entirely ceased, no air was drawn into the chest when the valve and dressings were removed.

It might at first sight appear as if a piece of rubber, closely applied over the opening as above described, would interfere with the discharge of pus through the drain. The discharge is, however, effected during expiration, when the intra-pleural pressure becomes superior to the pressure of the external air against the valve, and, therefore, raises it sufficiently for fluids to trickle out.

Peyrot<sup>1</sup> has shown that in pleural effusions the type of expiration changes; the force of inspiration diminishes as the expansion of the chest becomes incapable of determining a vacuum, and expiration becomes the principal act. It becomes active instead of passive, as is normal, and may be decomposed into two periods. In the first the glottis remains closed, and air is pushed toward the depths of the bronchi. In the second period the glottis opens, and air is expelled with a sigh. This form of respiration is normal to birds. It also greatly resembles that of frogs, where the lungs are not contained in closed cavities, and where, therefore, there is no mechanism for aspiring air by the creation of a potential vacuum. While the glottis is open air enters the upper air-passages. The glottis is then closed, and air is jerked toward the termini of the bronchi by movements resembling those of deglutition.

This change of respiratory type is well shown on some respiratory tracings taken from the right side of a dog's chest during successive injections of plaster-of-Paris into the left pleural cavity. The expiration begins to be prolonged and divided into two phases during the third injection, and from that

moment the inspiration continues to diminish in amplitude and duration—the expiration to increase in both.

In another dog, where a carotid tracing was taken during the injection, the trace immediately showed an increase in the respiratory oscillations, and a rise of blood-pressure to the extent of five millimetres of mercury. After the fifth injection there was a second rise of blood-pressure to the extent of ten millimetres. When twelve ounces of plaster-of-Paris had been injected, the pulsations were arrested, and the manometer needle fell fifteen millimetres.

The change of respiratory type in pleural effusions is not due to pressure exerted on the lungs, but to the inadequacy of the inspiratory expansion to effect its purpose of drawing air into the lung. This inadequacy persists after evacuation of the fluid and establishment of a fistula, although the abnormal positive intra-pleural tension be then greatly diminished. Therefore, the new type of breathing persists, though to a less degree. It would be very interesting to demonstrate this upon the human subject, but I have not been able to do so.

It is easy to see that the change of type is an advantage in the double task imposed—that of expelling fluids from the chest, which must be effected during expiration, and of reducing to a minimum the aspiration of air into the pleura, which would be effected during a vigorous inspiration. Correlatively with these desiderata, which inverts the normal ones, we find experimentally, and shall probably find clinically when we look for it, that the normal force of the respiratory movements is inverted—inspiration is diminished and expiration is increased.

The immobilization of the chest walls on the affected side while an intra-pleural effusion exists, and their collapse—especially marked in children after the fluid is evacuated—seem to be the mechanism by which inspiration is diminished. The cough, which, as in our case, comes on or is aggravated after the operation, is one of the means by which explosive exhalations are increased.

With these favoring circumstances, even the ordinary Lister dressing often suffices to solve the problem of so greatly diminishing the entrance of air through the fistula, that the air remaining within the pleura may become rarefied, the lung submitted to unopposed atmospheric pressure, and, therefore, reexpanded. This is the true mechanism of the clinical phenomenon which Dr. O'Dwyer has recently discussed with a certain despair of finding the explanation. Although air be not absolutely excluded from the pleura, yet if it be not renewed, or renewed in less proportion than it is absorbed, it will soon become rarefied, and the conditions of pulmonary reexpansion are then established as posi-

<sup>1</sup> Archives Gén. de Médecine, 1876.

tively, though less vigorously, than when a complete vacuum exists.

Homolle<sup>1</sup> has contrived to measure intra-pleural tensions by means of a manometer attached by a lateral stop-cock to the trocar used in evacuating effusions. In a case of empyema the measurements varied thus:

Before any fluid was withdrawn the intra-pleural pressure was positive, and equivalent to ten millimetres of mercury. When 500 grammes had been withdrawn, it had sunk to 0.002 millimetre; when 900 grammes, the pressure became negative to the extent of 0.007 millimetre, and after withdrawing 1000 grammes, the negative pressure was eighteen millimetres.

In the dog in whose pleura I injected water through an air-tight canula communicating with a manometer, the pressure was negative to the amount of five millimetres, and remained so after 300 grammes of water had been injected.

These facts show that the pleural cavity may contain some air and some fluid, and yet remain in a state of negative pressure relative to the atmospheric air, which, therefore, should not be opposed in expanding the lung.

As Weissberger has further pointed out, during the process of adhesion and obliteration of the pleural cavity the lung becomes tugged forward piece by piece, and when the adhesions are complete, the lung must be drawn out by every expansion of the thorax.

The presence of fluid in the chest when there is a free opening for it to run out, offers little more obstacle to the re-expansion of the lung than does the pressure of fluid in the flask to the re-expansion of the balloon. This is because the pressure of the fluid is always superior to that of the external air, and therefore easily overcomes it.

It is the clinical observation of frequent and even speedy recovery with the use of the Lister dressing alone,<sup>2</sup> which demonstrated that the above processes must take place as described.

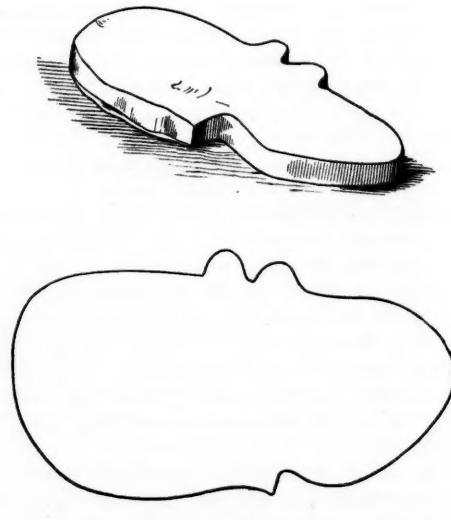
But whatever beneficial influence, from the dynamic point of view, may be exercised by the Lister dressing, is certainly greatly intensified by the use of such a valve as I have described. I think there is no doubt that the cavity became contracted to a sinus on the fifteenth day after the operation, and that the tube might have been removed at least ten days earlier than it was.

To the extent to which the occlusion of the fistula during inspirations is complete, the normal type of respiration tends to be reproduced, and the cavity

to be obliterated by more vigorous inspiration of the lung.

Peyrot remarks that when, being bound by false membranes, the lung is unable to expand, the diminution of pressure in the pleura seems to favor putrefaction or fermentation, even without contact with external air. The importance of the pulmonary expansion as a means of obliterating the cavity is so great, and as such has always been so well recognized, that the frequent failures of such methods as subaqueous drainage<sup>1</sup> seem more surprising than its successes. These failures are the best possible proof that the antiseptic part of the problem is as important as the mechanical; that sepsis is liable to occur through infection of the external wound, even when air is rigorously excluded from the pleura; and finally, that constant irrigation of granulation tissue that should be left in the greatest repose, interferes both with the healing and with the mechanical mechanisms of re-expansion. During the treatment of the boy Frank, I took a certain number of casts of his chest, by a process which is very simple, but which I have not hitherto seen described. I encircled the thorax with a cytometer, and having carefully removed the instrument I placed it, closed, on a perfectly flat surface, and poured in fluid plaster-of-Paris. A cast was thus obtained, one-half an inch in thickness, and which accurately represented a transverse segment of the chest, and the inequalities of the two sides. The

CAST I.



In profile.

<sup>1</sup> Revue Universelle Médecine et Chirurgie, 1879.

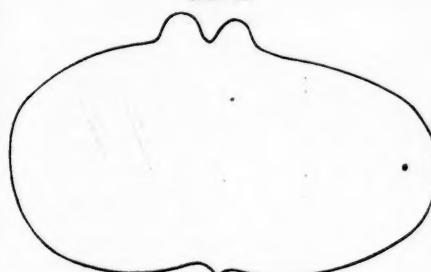
<sup>2</sup> In one case reported by Bouveret, the empyema was completely cured in nine days, the shortest time on record. The expansion of the lung was so rapid that it certainly preceded the cicatrization of the pleura.

first cast was taken on the eighteenth day, a week after the irrigation. It represents a segment imme-

<sup>1</sup> Playfair: Transactions London Obstetrical Society, 1872.

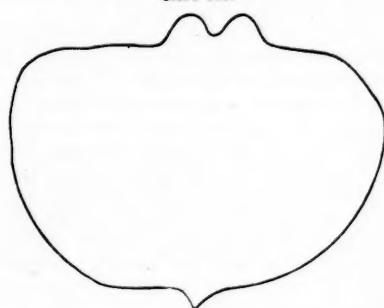
diately under the axillæ. The second cast is from the same locality, and is taken a week later, the twenty-fifth day. The two other casts were taken

CAST II.



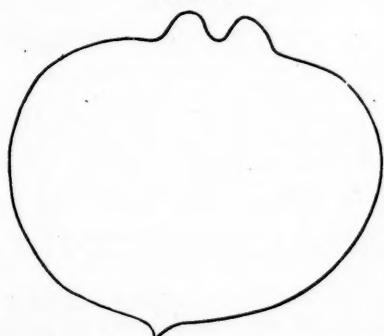
a few days after cicatrization. No. III. from the level of the axillæ, No. IV. from the level of the seventh rib. The odd-looking projections on the

CAST III.



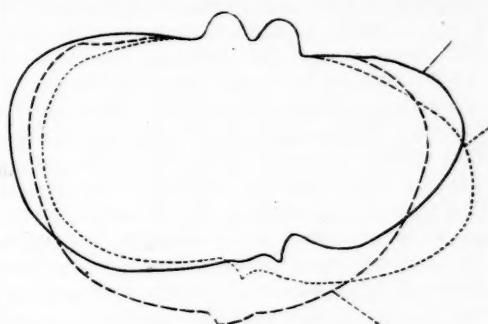
posterior aspects of these casts are due to a mistake made in the application of the cytometer, which was put on inside out. This does not, however, essentially change the character of the casts.

CAST IV.



The general shape of the affected side in the fourth cast well illustrates Peyrot's remark, that there is a total deformity of the chest, which results in a sort of "oblique oval thorax." I regret very much not to have secured a cast on the preceding week, as then the affected side was much more col-

lapsed, the shoulder drawn over and downward, so that the alarmed parents inquired about the danger of permanent deformity. The cast of the eighteenth day shows: First, a deviation of the sternum toward the affected side, and half an inch to the left of an antero-posterior line traversing the segment from the vertebral column. Second, a marked diminution in circumference, in transverse and in antero-posterior diameters as compared with the sound side.<sup>1</sup> The cast taken the following week, however, shows that the differentiation on the first occasion had depended upon an enlargement of the right half of the chest, as well as on the contraction of the left. The deviation of the sternum was



Casts superimposed.

much less; and the right circumference both to the deviation and to the median line was two inches less than it had been before the transverse diameter was diminished an inch; the antero-posterior the least of all—a quarter of an inch.<sup>2</sup> The measurements of the left side are increased, not only over those of the previous week, but over those of the right side, except the antero-posterior diameter, which is still one-quarter inch smaller. As before, the transverse diameter exceeds the antero-posterior.

In the following week, after cicatrization of the fistula, the sternum has returned to the median line,

<sup>1</sup> Measurements, October 14th :

	Inches.
Circumference, left (affected side), to point of deviation of sternum	7½
Circumference, right, to point of deviation of sternum	10½
Circumference to median line, left	8½
Circumference to median line, right	10
Transverse diameter to median line, left	3¼
Transverse diameter to median line, right	4¾
Antero-posterior diameter, left	3
Antero-posterior diameter, right	4

<sup>2</sup> Measurements, October 22d :

Circumference to deviation, left	9¾
Circumference to deviation, right	8½
Circumference to median line, left	9½
Circumference to median line, right	8
Transverse diameter, left	4¾
Transverse diameter, right	3¾
Antero-posterior diameter, left	3½
Antero-posterior diameter, right	3¾

the diameters of the two sides of the chest are nearly the same, but the right circumference exceeds the left by one and a half inches. Below, at the level of the xiphoid cartilage, the circumferences are equal; to the median line, both diameters larger on the right side by one-quarter inch.<sup>1</sup>

It is interesting to be able to measure thus graphically the compensatory hypertrophy and shifting of the sternum and mediastinum during the collapse of the left lung, and the gradual diminution of this hypertrophy and restoration of normal proportions as the collapsed lung expanded.

In concluding this paper, which has not aimed at being systematic, but which has taken up details of interest as they occurred to me, there is one further remark to make. It seems to me that the two common observations of the frequency of empyema in children, and of its usually favorable course, are observations mutually correlative. The favorable prognosis does not apply to the empyemas of infectious diseases; nor is it solely due to the greater elasticity of the chest walls in childhood, permitting more facile collapse. But the appearance of pus in the effusion is to be considered less significant, because more easily excited by the same degree of inflammation. It would seem as if the rich system of subendothelial lymphatics in the pleura,<sup>2</sup> poured out leucocytes freely through the intercellular stomata, when these are dilated in the inflammatory hyperæmia of the pleura, and during the preliminary shrinkage of the endothelial cells.<sup>3</sup> Pus, therefore, appears in the effusion before the pleura has become thoroughly infiltrated, and continues to be secreted so long as the stasis remains in the vascular and lymphatic capillaries.

**The Flushing Hospital.**—The hospital at Flushing, Long Island, has recently received a bequest of \$10,000 under the will of the late John Henderson, the well-known seedsman.

	Inches.
<sup>1</sup> Measurements, November 2d, under axillæ :	
Circumference, left . . . . .	8½
Circumference, right . . . . .	9½
Transverse diameter, left . . . . .	3½
Transverse diameter, right . . . . .	3½
Antero-posterior diameter, left . . . . .	4
Antero-posterior diameter, right . . . . .	4½
At level of seventh rib and xiphoid cartilage—cartilage deviated to right:	
Circumference to median line, left . . . . .	8½
Circumference to median line, right . . . . .	9½
Circumference to deviation, left . . . . .	8½
Circumference to deviation, right . . . . .	8½
Transverse diameter, left . . . . .	3½
Transverse diameter, right . . . . .	3½
Antero-posterior diameter, left . . . . .	4½
Antero-posterior diameter, right . . . . .	4½

<sup>2</sup> Klein: Anatomy of the Lymphatic System.

<sup>3</sup> Delafield: Studies in Pathological Anatomy.

#### A CASE OF DIFFUSE SUPPURATIVE PERITONITIS FOLLOWING PERFORATION OF THE APPENDIX VERMIFORMIS.<sup>1</sup>

BY JOHN R. WINSLOW, B.A., M.D.,  
PROFESSOR OF PHYSIOLOGY IN THE WOMAN'S MEDICAL COLLEGE  
OF BALTIMORE

AT 3.30 A.M., Wednesday, November 20th, I was summoned to see Willie S., aged nearly seventeen years, and was given the following history: After returning, apparently in perfect health, from his usual daily work, the boy had eaten very heartily of buckwheat-cakes at supper. About three o'clock in the morning he was seized with violent cramps, but was for some time unable to arouse any of the family, so that he had been suffering nearly an hour before my arrival. When I first saw him he was suffering from intermittent pains, not very frequent or severe, and was vomiting freely. He had slight fever (temperature  $100\frac{2}{3}^{\circ}$ , pulse 120).

Believing it to be an ordinary case of cholera morbus, I administered  $\frac{1}{6}$  grain of sulphate of morphine hypodermically, and directed the mother to give a dose of oil in the morning.

About the middle of the day I received word that the boy was still suffering somewhat, although better, and I was requested to call again. Upon my arrival I found the patient lying flat on his back in bed, complaining of some soreness in the lower portion of his abdomen, but particularly of nausea. He had no fever and a fairly good pulse. Upon inquiry I found that the oil had been given but with no effect. I palpated the abdomen superficially without eliciting any complaint or sign of pain. In view of the failure of the castor oil to open the bowels, I ordered half an ounce of magnesium sulphate, to be repeated within two hours if necessary.

Next morning (Thursday) I found that both doses of Epsom salts had been given without effect. Patient, however, felt better: temperature  $97^{\circ}$ ; pulse fair; occasional vomiting. I then examined the abdomen with the greatest care for any induration or tenderness, and found nothing noticeable in these respects. During the examination, however, I noticed that the fibres of the abdominal muscles were somewhat more perceptible than usual, but would not describe the sensation as that of "board-like hardness." I inquired particularly as to the character of the vomited matter, and found that it presented neither the odor nor the appearance of faeces. In the evening I found much the same condition of affairs; temperature subnormal, pulse, however, very rapid—150. The bowels had not been moved. I then ordered a mixture, essentially a compound infusion of gentian, to be given by the mouth, and if vomited to be repeated *per rectum*.

Next morning (Friday) I found that the dose by the mouth had been vomited, but the enema had caused a slight movement of the bowels. Patient seemed better, pulse slower and fuller, temperature still subnormal. In view of the apparent improvement, I ordered the enema to be repeated. This caused, during the afternoon, several good though not copious evacuations of that greenish character

<sup>1</sup> Read before the Clinical Society of Maryland, Dec. 20, 1889.

popularly ascribed to bile. An improvement in the patient's condition resulted.

Being, however, uneasy about him, I called early next morning (Saturday) to see him. I found him without radial pulse, and cold, but perfectly intelligent and complaining of feeling weak. I resorted to most vigorous stimulation, and in the course of an hour after the injection of whiskey and nitro-glycerin hypodermically, I succeeded in developing a radial pulse. I then ordered tincture of digitalis ten drops, and left to secure the opinion of my brother, Dr. Randolph Winslow, as to the advisability of a laparotomy. Upon our return, within half an hour, we found the patient again without radial pulse, and laparotomy was, of course, out of the question. He became weaker and weaker, notwithstanding vigorous stimulation, and died just before 12 M. of the same day.

At my first visit in the morning, upon finding my patient in a condition of collapse, I had expressed the opinion to the mother that he had a "hole in his bowels," and after death I requested an autopsy. The request was, as is usual, refused, but was subsequently granted, owing to the persuasive eloquence of the colored undertaker, coupled with the remark that "they would do it anyhow at the health office."

*Autopsy.*—Upon the day succeeding death my brother and myself performed the post-mortem, and found the following conditions: The abdomen was considerably swollen and more discolored than is usual so soon after death. Upon making an incision through the peritoneum pus escaped through the opening in considerable amount; the intestines were somewhat adherent to the abdominal walls, but not to a marked extent. Upon exposing the abdominal contents a condition of intense purulent inflammation was revealed. The intestines were bathed in malodorous pus and covered in places by deposits of lymph. Pus was everywhere, even under the liver, and could only be drained off by cross-cutting the abdominal wall and turning the cadaver on its side.

After draining off about a quart of pus, we proceeded to examine systematically the intestinal tract; the upper portion seemed to be of normal color and appearance; the pelvic coils, however, were dark and enlarged. The focus of inflammation was in the right iliac fossa, which contained a considerable quantity of liquid faeces. The cæcum and adjacent portions of the colon and ileum were firmly bound down.

The vermiciform appendix was intensely inflamed, and was adherent to the cæcum; it was much distended, especially near its middle, where a hard lump could be both seen and felt; just below this was a perforation of considerable size, with gangrenous edges; the lumen of the appendix was found to be largely filled with hardened faeces, which formed a cast of its interior.

*Post-mortem Diagnosis.*—General suppurative peritonitis. *Acute*, for there was no evidence or history of previous attack. "Fulminating," for its entire duration was less than four days.

In conclusion, allow me to emphasize the following points presented by this case:

1. Subnormal temperature (oral). With the exception of the incipiency of the attack, during the entire course of the disease the temperature was subnormal, varying from  $95^{\circ}$  to  $97^{\circ}$ , being at no time below the former or above the latter temperature.

2. The absence of abdominal tenderness. At no time was there marked tenderness of the abdomen. I sought carefully for it, and upon the morning of death my brother also palpated the abdomen without causing any expression of pain from the boy. He complained simply of soreness in the lower portion of the abdomen, which was diffuse and not confined to one side. Nor was this soreness marked enough to require the administration of opiates.

### 3. Obstinate constipation.

In the light of the post-mortem examination we may thus explain the course and symptoms of the case; the trouble originated with the impaction of faeces in the vermiciform appendix; this occurred before, and was not connected with, the ingestion of the large meal of buckwheat-cakes. The colicky pains and fever marked the perforation of the appendix at a point weakened by ulceration. This permitted the escape of liquid faeces into the abdominal cavity, setting up at first localized and then general purulent peritonitis.

The obstinate constipation was due to paralysis of the intestinal walls, from the peritoneal inflammation.

Since the difficulty with these cases lies in the diagnosis, and since it is, as a rule, the general practitioner who must detect them, a few practical points in connection with the same may not be out of place.

Persistently subnormal (oral and axillary) temperature and absence of abdominal tenderness, present in this case, together with a "board-like" hardness of the abdominal walls, which was not present, are, if not pathognomonic, at least frequently associated with suppurative peritonitis.

One precaution,<sup>1</sup> however, in regard to the temperature is necessary. To appease the intense thirst of this condition, *ice and cooling drinks* are resorted to, which renders the taking of temperature *per os* fallacious.

The rectum, being in close proximity to the peritoneum, affords an almost direct means of obtaining the true temperature of the peritoneal cavity. In cases of inflammation, the rectal temperature is never subnormal. There may be a difference of several degrees between the axillary and the rectal temperatures, and the former may be subnormal, while the latter indicates high fever.

<sup>1</sup> A most valuable point raised by Dr. L. McLane Tiffany in discussing this case.

**TREPHINING FOR EXTRA-DURAL HÆMORRHAGE.**

BY JOHN B. DEAVER, M.D.,

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IN THE UNIVERSITY OF PENNSYLVANIA; ATTENDING SURGEON  
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APPARENTLY, much has been done in the past two years in brain surgery, and by far the greatest number of operations and reported successes have been for focal or Jacksonian epilepsy. In this class of cases the immediate results have been good, but we cannot say this of the remote; and, therefore, in my judgment, I consider that beyond giving temporary relief, or beyond holding the trouble in abeyance for a time, these operations have accomplished most in demonstrating the amount of manipulation the brain is capable of permitting, providing that this is done by skilled hands, and that every possible antiseptic precaution is taken. Again, the lateral ventricles have been tapped, but this offers no more than temporary relief. It does not by any means remove the factor, which is slowly but surely killing the patient. This is true to a great extent in the case of tumors, as we know that the most common brain tumors are tubercular, sarcomatous, and syphilitic, and therefore in the event of their successful removal the patient is not restored to a normal condition, but is left crippled. The more favorable results have been obtained in tumors springing from the dura mater or membranes, and which are not strictly tumors of the brain substance but invade it by pressure, excavating for themselves a bed or nest.

Contrast with the above trephining for intra-cranial hæmorrhage, particularly of the extra-dural variety; here the operation, if done early, is in every sense a life-saving agent, practical as well as permanent in its results in the majority of cases.

Of the varieties of intra-cranial hæmorrhage we have four:

1. Where the blood escapes or finds its way between the inner wall of the cranium and the dura mater.
2. Where it finds its way into the sub-dural space.
3. Where it finds its way into the sub-arachnoid space and into the meshes of the pia mater.
4. Where it escapes into the substance of the brain or into the ventricles.

Erichsen gives the third variety as the most common form of intra-cranial hæmorrhage, while Prescott Hewitt gives the second; but in the cases which I here report, and in which I trephined, all were of the extra-dural variety.

When blood is poured out between the dura mater and the bone, in cases of fracture, the vessel that is torn, as a rule, is the middle meningeal artery. Mr. Jacobson has shown that the branches of this artery

are more frequently ruptured than the trunk. The vessel is very frequently torn at the point where it crosses the anterior inferior angle of the parietal bone. The reasons for this are: 1. That the bone at the site of the groove for the artery is very thin. 2. That the vessel is so frequently buried in the bone that fracture without laceration of the vessel is hardly possible. 3. That this part of the skull is peculiarly liable to be broken. It has been shown that the artery may be ruptured by force sufficient to occasion detachment of the dura mater, but not great enough to fracture the skull. Next to the middle meningeal, the most frequent source of extra-dural hæmorrhage is the lateral sinus.

On referring to the attachment of the dura mater to the interior of the cranium, we find that it is very intimately adherent to the bone forming the interior of the wall of the skull; therefore this variety of hæmorrhage in this situation is barely possible. Over the vault of the cranium its attachments are comparatively loose, except along the lines of the sutures. Bell has pointed out that the dura mater of the vault may be separated from the bone by the vibration produced by a blow. Strike the skull of the subject with a heavy mallet, and on dissecting you find the dura mater shaken from the skull at the point struck. Repeat the experiment on another subject, and inject the head minutely with injection fluid, and you will find a clot of injection lying between the skull and the dura mater at the part struck, and having an exact resemblance to the coagulum found after a violent blow on the head. Tillaux has demonstrated that the adhesions between the dura mater and the bone are particularly weak in the temporal fossa, the most usual site of meningeal hæmorrhage.

In the diagnosis of extra-dural hæmorrhage the following points are to be observed:

The *mental condition* may be normal, or there may be cerebral irritation. Unconsciousness, complete or incomplete, or coma.

*Condition of Pupils.*—Both may respond to light normally. Both may be dilated, and show no response; or one may be widely dilated, and the other normal. When the dilated pupil corresponds to the injured side, it is caused, as pointed out by Hutchinson, by the pressure of a large clot, extending deeply down into the base of the skull, on the cavernous sinus, leading to fulness of the vessels, with protrusion of the eyeball and dilatation of the pupil. It is also accounted for by compression of the oculo-motor nerve, through the medium of the clot.

*Respiration* may be stertorous, or Cheyne-Stokes in character.

*Pulse.*—Little changed or rapid and feeble, depending largely on the severity of the concussion,

or slow and full depending upon the severity of the compression.

*Limbs.*—May present any of the following conditions: Hemiplegia, well or but little marked; monoplegia, paralysis, twitching, convulsions, or spastic rigidity.

*Scalp.*—Presence of contusion, or bagginess due to the injury; the latter also due to leakage from within the cranium through a fissured fracture.

The stages presented by a typical case of extra-dural hæmorrhage are three:

1st. Complete or partial unconsciousness, the result of the concussion or shock, caused by the fall or blow, as the case may be.

2d. Consciousness or lucidity. This stage may vary in length from a few minutes to several hours. "Is present in about one-half of the cases," says Jacobson.

I have observed that a very large hæmorrhage may produce compression at once; my observations being verified by post-mortem examination. Compression may also come on immediately, caused by coexisting depression of bone, injury to the brain, and alcoholism.

The following case, which is a good example of all three, is of interest:

H. K., twenty-three years old, white, was admitted to the German Hospital, December 19, 1889, 12.30 P.M., having met with an accident, the history of which is as follows: He had fallen a distance of fifteen feet through an elevator, landing on the top of his head. His condition, as described by the resident physician, Dr. Gerlach, upon admission, was: Complete unconsciousness; pupils responding to light; conjunctival reflexes active; respiration 24; pulse 100; temperature 99°. The scalp was much swollen and boggy over the whole of the left side and vertex, with a lacerated wound of the right ear at the junction of the concha with the scalp. Urine drawn, quantity small, normal in reaction and color; chemical tests for albumin and sugar negative. The patient remained in the above condition twenty minutes, when he regained partial consciousness for about five minutes; he was then seized with a general epileptiform convolution, lasting one minute. The convolution, as described by the Sister, was thought to have commenced in the right leg, but it became general so soon that she could not be certain. After the convolution the patient could not be aroused fully, but showed some evidence of consciousness when spoken to. His breathing was embarrassed, the pulse full and strong. After an interval of ten minutes he was seized with another convolution, lasting about double the length of the first, which was described by a second Sister present, as corresponding with that of the first seizure, but she too was in doubt about the spasm commencing in the right leg, as it became general so soon. Dr. Gerlach was sent for, but arrived too late to witness the convulsive seizures. The patient was now intensely cyanosed, respirations slow, deep,

and stertorous, pulse slow and full. Upon my arrival at the hospital, but a moment or two later, very fortunately, I found his condition as above noted. Examination of the right side demonstrated the limbs to be slightly spastic, the left paretic. As there was but little doubt in my mind that the condition was one of intra-cranial hæmorrhage, and most probably of the extra-dural variety, there having been an interval of consciousness between the reaction from the concussion or shock, and the development of convulsions, I immediately prepared to trephine over the anterior branch of the middle meningeal artery. The scalp was quickly prepared for a strictly antiseptic operation, and ether administered. A large horseshoe flap, including all the layers of the scalp, with its convexity directed downward and backward, was turned up on the left side by carrying an incision from directly behind the external angular process of the frontal bone, to above and behind the parietal eminence; a fissured fracture was now seen following the coronal suture. To trace it throughout its entire length, two further incisions were made, one following the line of the coronal suture, the other from the termination of the latter, a short distance over the right parietal bone; when these flaps were reflected forward and backward, almost the entire vertex was laid bare. In the sub-aponeurotic space and infiltrating the areolar tissue of the scalp was an extensive extravasation of blood. The fracture extended from the beginning of the coronal suture to about one and a half inches beyond the sagittal suture; from this point a fissure extended obliquely downward and backward into the right parietal bone, also one obliquely forward and to the left, involving both the right and left frontal bones, stopping short of the supra-orbital margin. There was some bleeding from beneath the bone through the line of separation of the coronal suture, most marked on the left side. With a medium-sized trephine, an inch and a half in diameter, a button of bone was removed at a point one inch and a half behind the external angular process of the frontal bone, and one and three-quarters inches above the zygoma, when the anterior branch of the middle meningeal artery was exposed, the ends of which were ligated with catgut. The bleeding not being entirely arrested, with a pair of Hopkins's modification of the Rongeur forceps, the opening was enlarged in the direction of the groove in the squamous portion of the temporal bone, through which passes the posterior branch of the above vessel, when it was plainly to be seen that the source of the remaining hæmorrhage was most probably this branch near its point of origin; the opening was, therefore, enlarged in the direction of the spinous foramen of the sphenoid bone, and after cutting away bone to the extent of about one-half inch, the vessel was seen to be torn and bleeding freely. Both ends were tied with catgut, after which the hæmorrhage ceased. The cavity occasioned by the separation of the dura mater was washed out with a 1 to 2000 bichloride solution. I removed a second button of bone, three-quarters of an inch in diameter, from a point about three-quarters of an inch to the left of the sagittal suture, and about one

inch posterior to the separated coronal suture. This corresponded to the upper and posterior margin of the cavity caused by the separation of the dura mater. My object in doing this was to enable me to pass catgut drainage through this opening and out of the one first made, thus securing a perfect outlet to any liquid that would otherwise have a tendency to collect in the cavity. Through this last opening I incised the dura mater and exposed the sub-dural space, to determine whether or not there was either the second or third variety of intracranial haemorrhage associated with the extra-dural which I had already checked. This proved negative. The incision of the dura mater was closed with catgut suture. The end of a rubber drainage-tube, one-quarter of an inch in diameter, was placed in the lower and anterior of the two openings made in the wall of the skull, and brought out at the lower angle of the scalp wound, where it was fixed by a silver wire suture, loosely twisted. A second rubber drainage-tube, the same size as the above, was placed beneath the scalp flaps, above the two trephine openings and brought out in front and behind, where it was fixed by silver wire suture. The flaps were now completely adjusted and held in apposition by interrupted silver wire sutures. Through the tubes a 1 to 2000 solution of bichloride of mercury was passed, and the wound dressed antiseptically. A hypodermic injection of one-eighth of a grain of morphine was given to the patient, when he was removed from the operating table. Dry heat was applied to the body and an ice bag to the head. He reacted nicely and slept for four hours after the operation, when he awoke and was fairly rational. Being now able to swallow, he was ordered milk diet and given one-quarter of a grain of calomel, with two grains of Dover's powder every two hours. At 8 P.M., six and one-half hours after the operation, he was perfectly quiet and entirely rational. Pulse 90; respiration 28; and temperature 100°. Pupillary reaction normal; he was able to execute the ordinary movements with his extremities, and said that he felt pretty comfortable, although he had some pain in his head during the night and was somewhat restless.

*December 20.* Condition unchanged from that of the previous evening.

At 3.30 A.M., December 21st, had a slight convulsion, beginning in the right upper extremity with flexion of the hand upon the wrist, then the forearm on the arm, when it immediately became general. This lasted about half a minute. At 5.30 A.M. he had a second convolution similar to the above and lasting about the same length of time. Between and after these convulsions he slept. At 8 A.M. the condition of the patient was good with the exception of the pulse, which was full and bounding. In addition to the calomel and Dover's powder, tincture of veratrum viride two drops and bromide of sodium twenty grains every two hours were ordered.

*23d.* Dressings changed, no pus; drainage-tubes clear; tincture of veratrum viride and bromide of sodium stopped.

*26th.* Calomel and Dover's powder stopped since slight mercurial stomatitis had developed, for which

a gargle of chlorate of potassium and Listerine were given. From this time on, recovery was uninterrupted.

In closing my paper, I would not have it understood, from what I said in the beginning, that I am opposed to trephining for focal epilepsy, brain tumors, etc., for I am not; but I do not consider the results in these cases as brilliant as in cases of extra-dural haemorrhage. Head injuries, both as regards their immediate and remote effects, are of interest to the neurologist as well as to the surgeon. I do not think it out of place to tabulate my rules for trephining in this class of cases:

1. In simple depressed fractures of the skull, with or without symptoms of compression.
2. In compound depressed fractures, with or without symptoms of compression.
3. In punctured or incised fractures, fractures of the orbital plate of the frontal bone, and punctures of the cribriform plate of the ethmoid, applying the trephine to the roof of the orbit at the inner angle, thus opening up the most dependent part of the cerebral fossa, thereby favoring drainage, which is the chief indication in this class of injuries.
4. Foreign bodies in the brain.
5. Impacted fractures in gunshot wounds.
6. In gunshot injuries of the skull.
7. In contusions of the scalp simulating depressed fracture I expose the wall of the cranium at the seat of the contusion, when, if I find a depressed fracture, I trephine. If a fissured fracture, I trephine if there is any haemorrhage through the line or lines of the fracture.

## CLINICAL MEMORANDA.

### THERAPEUTICAL.

*Ichthyl Ointment Externally in Inflammations of the Throat.*—I have recently had occasion to treat a number of cases of an apparently edematous sore throat, belonging in all probability to the same class of staphylococcal-pharyngeal inflammations as those to which Glasgow has particularly directed attention, and which he is doubtless correct in regarding as a variety of influenza. The point to which I now desire to call attention in regard to these cases is the great relief afforded by the inunction of a fifty per cent, ointment of ichthyl externally, beneath the angle of the jaw and along the border of the sterno-mastoid muscle. In three cases there were infiltration and tenderness in this region, which suggested the application. Its prompt and unexpected effect in relieving the pain which accompanied deglutition, suggested that the same measure might be usefully employed, even in the absence of external swelling. In most cases of sore throat, even simple follicular tonsillitis, there is usually more or less involvement of some of the fibrous tissues, whether of the submucosa of the subcutaneous connective tissue of the muscular sheaths, or of the various planes of fasciae.

The same relief followed in the cases without external manifestations, as in the others. I am inclined to a more extended use of the agent in this manner, and even to its topical application to the mucous membrane, with a view to ascertaining its true value. It is quite possible that this use of ichthylol is not novel, and I make no claims in that direction.

SOLOMON SOLIS COHEN, M.D.

219 SOUTH SEVENTEENTH ST., PHILA.

## HOSPITAL NOTES.

### A NEW OPERATION FOR HERNIA; EXCISION OF VARICOSE VEINS; NEURECTOMY OF INFERIOR DENTAL NERVE.

*Abstract of a Clinical Lecture delivered at the New York Hospital.*

BY ROBERT F. WEIR, M.D.,  
ATTENDING SURGEON.

DR. WEIR presented to the class a patient on whom he proposed to perform the usual operation for the radical cure of hernia, *i. e.*, to cut down upon the sac, return its contents into the abdominal cavity, then ligate and remove the sac at the internal ring. In addition to this, he introduced a novel feature, consisting in the use of a bone plate, which would more effectually close the ring. The plate of bone was removed from the scapula of a recently killed dog, and a semicircular opening was cut out of its upper surface, so as to protect the spermatic cord from undue pressure. Several small holes were punched in the plate, which was thoroughly disinfected and introduced into the wound.

In these operations, which, in the separation of the sac from the cord, sometimes require careful dissection of the fasciae, by tearing layer after layer, it is important before attempting to close the wound, to examine the tissues carefully, and make sure that those remaining are in a condition to survive the manipulation.

The next case was one of extensive varicosities of the leg and lower part of the thigh, which demanded more radical treatment than simple or multiple ligation. In these cases, the deeper set of veins is also varicose, and hence, if only the external vein be occluded, there is no more relief than results from removing the tension of the skin, and the patient is still annoyed, although not so much, by the stretching of the deeper parts. In Dr. Weir's experience, the best results have been obtained by the employment of what is known as Marshall's method, or resection of a long strip of the veins. Since the advent of antiseptics, this method has been more frequently resorted to, and usually with good results. The operation necessitates a long wound, and owing to the impaired vitality of the skin from prolonged tension, there is not infrequently a small track of suppuration along the wound, which delays the healing process.

In the present instance, the course of the veins was mapped out with aniline before applying the Eschard bandage, in order to furnish a guide for the subsequent incisions. The vein in the upper and inner part of the leg, and extending up along the thigh, was then carefully exposed, and about eight inches of it excised, after applying a ligature above and below this portion, and to numerous branches issuing from within the fasciae to the

venous track. The same procedure was adopted with the smaller varicosities in the middle third of the leg.

Another case of interest was one of long-standing neuralgia, affecting the left side of the lower jaw, and particularly severe along the anterior distribution of the inferior dental nerve. There was also some pain experienced in the parts supplied by the auriculo-temporal nerve; but as this was only occasionally present, it was hoped that the operation of neurectomy on the inferior dental nerve would relieve the pain in both situations.

A section of the inferior dental nerve in its upper portion presents considerable difficulty. The operative field on the inside reaches from the dental foramen up to the foramen ovale, a distance of only about one inch, in a region which is not easy of access; and the gustatory nerve splits off from the main nerve, and remains in close proximity to the inferior dental. The inferior dental nerve can be reached best in its deeper path by dividing and turning down the temporal muscle, with or without section of the zygoma. A division of the lower jaw bone, as advocated by Mikulicz, gives ample room, and sometimes allows one to see up as far as the foramen ovale. This is sometimes followed by non-union, but does not cause impairment of the function of the articulation of the jaw, which sometimes follows the first-named operation. Dr. Weir considered both of these methods too severe for this case.

Here, he said, we had the choice of two operations: one known as Paravicini's, or the internal operation, and the other, the external incision. The internal operation consists in opening the mouth widely, and making an incision about one inch long just above the wisdom tooth, along the anterior edge of the lower jaw, and through the periosteum, which is to be peeled off (this is important, or one will go astray), and then feeling for the edge of the dental foramen, or for the spine known as the point of Spix. Occasionally, one can recognize by sight, though more commonly by touch, the nerve as it passes into the foramen, where it can be seized, and from one-quarter to one-half inch removed. This is a region which does not easily admit of operative work, for the gustatory nerve is close behind, and is sometimes cut by mistake for the inferior dental nerve, or damaged during the operation. Dr. Weir had had, in one of his own cases, a very severe hemorrhage during this operation, in which the patient lost six or eight ounces of blood, and which was only checked by plugging the cavity with iodoform gauze. The hemorrhage recurred the same evening, and the patient lost four or five ounces more. The bleeding was so free, that it was not likely that it came from the inferior dental artery, but was probably caused by seizing and drawing forward the internal maxillary artery.

This internal operation is an ideal one, on account of its leaving no scar; but otherwise it is not satisfactory, and in this case the external method was adopted.

An incision was made, beginning about one finger's breadth above the angle of the jaw, to avoid the branches of the seventh pair, and was carried up anteriorly along the edge of the jaw-bone until it reached the anterior border of the masseter muscle. Then it was curved upward slightly on the cheek. With the handle of the scalpel, the soft parts, including the muscle, were readily detached from the bone; and in this way, with a blunt retractor dragging the tissues upward, Dr. Weir was able

to reach to a point about opposite the point of Spix. The bone was exposed and chiselled away, and after a slight hemorrhage from the inferior dental artery had been controlled by pressure with a cotton-wrapped probe, the nerve was drawn down strongly, and about three-quarters of an inch removed. The masseter muscle was sewed to the edge of the jaw with catgut, a horse-hair drain inserted, and the skin wound closed by numerous fine black silk sutures. Black silk sutures are more easily seen when it is desired to remove them; and in order to reduce the scar to a minimum, it is important to introduce a great many of these sutures, and to begin removing them the following day. If there is much tension, two or three sutures should be left in on the third day, but otherwise, all of them should be out at that time.

Dr. Weir said that for the next day or two there would probably be a good deal of swelling of the face in the neighborhood of the wound, in which the parotid gland would in all probability participate.

## MEDICAL PROGRESS.

*Treatment of the Uric Acid Diathesis.*—In the treatment of the uric acid diathesis DR. HENRY PICARD advises the administration of water in large quantities, believing that it is of use in assisting mechanically in the expulsion of uric acid that may be deposited in the kidney and in diluting that which may be contained in the blood. Water alone possesses such slight solvent effects upon uric acid that to it should be added an alkali. Lithia greatly augments the solvent power of water and may be given in the following mixture:

R.—	Carbonate or citrate of lithium	15 grains.
Pulverized sugar . . . . .		1½ drachms.
Citric acid . . . . .		3½ "
Bicarbonate of sodium . . . . .		4½ "

Mix and divide into sixteen powders, of which one should be given in a glass of water four times daily.

The solvent effects of the potassium salts are also well marked and they may be administered thus:

R.—	Bicarbonate of potassium	1½ ounces.
Citric acid . . . . .		1 ounce.
Water . . . . .		12 ounces.—M.

One ounce of this in three or four ounces of water makes an insipid solution that may be given even to children.

Some persons do not tolerate the alkaline carbonates well and, for such, the phosphate of sodium, administered in doses of from thirty grains to two drachms, is an efficient substitute.

The alkaline benzoates are also excellent solvents, and change the insoluble uric acid into the soluble hippuric. The benzoates of sodium and calcium are perhaps the best and may be administered in solution or in pill form in doses of from three to thirty grains. Benzoic acid may also be used, the following being an excellent formula in which to administer it:

R.—	Benzoic acid . . . . .	15 grs. to 1 drachm.
Phosphate of sodium . . . . .		2½ drachms.
Syrup . . . . .		7 "
Water . . . . .		3 ounces.—M.

One-fourth to be taken at a dose.—*Journal de Médecine de Paris.*

*Iodoform in Surgery.*—The true position of iodoform as a surgical dressing has long been questioned. On the one hand are the surgeons who declare that it is a valuable antiseptic; on the other, are the mycologists apparently proving by laboratory experiments that it has little or no antiseptic power. In the *Annals of Surgery*, January, 1890, MR. A. ERNEST MAYLARD, of Glasgow, records an elaborate series of observations upon the influence of iodoform on bacteria, which seem to prove that iodoform in great excess has a germicidal effect upon the microbes of pus. Where the microbes are in abundance, some retarding influence appears to be exercised by iodoform upon their growth and even some diminution in the numbers which subsequently develop; but, if the number present be large, no germicidal effect is observed.

The general result of this series of experiments seems to show that iodoform has some distinctive power, and that its supposed or acknowledged value in surgery is borne out by experiments in the laboratory.

It may fairly be assumed that where iodoform is added to a wound, it will be largely in excess of any microbes present, and, therefore, precisely in the position in which the experiments seem to indicate that its antiseptic power lies.

As compared with many other much more powerful antiseptics, the special value of iodoform must rest upon its prolonged action. Solutions are absorbed, or carried away by the discharges, whereas iodoform remains as an almost permanent application. So that it is not infrequent to find, on the removal of a dressing, some weeks after its original application, the iodoform still on the surface of the wound, and as active—if the pungency of the odor may be accepted as a criterion of the continuance of its antiseptic power—as when first used.

[These observations do not support the conclusions of TILANUS (*Centralblatt f. Chirurgie*, January 4, 1890), whose experiments convince him that iodoform has a certain amount of influence in retarding the growth of tubercle bacilli, but that in fresh wounds and non-specific suppuration it is only useful as a dry protective.—ED.]

*Creasote in the Treatment of Chronic Gonorrhœa.*—DR. BREIMA recommends in the *Riforma Medica* the following injection for chronic gonorrhœa:

R.—	Creasote . . . . .	10 minimis.
Fl. extr. of hamamelis		
Fl. extr. hydrastis	of each	15 "
canadensis . . . . .		
Rose water . . . . .		4 ounces.—M.

This should be slightly diluted with warm water before using.

*Benzoate of Bismuth in the Treatment of Chancroids.*—DR. FINGER has treated in the past eighteen months sixteen cases of soft chancre with local applications of bismuth benzoate. In each case the surface of the sore was thoroughly washed, a thin layer of the benzoate applied by means of a soft brush, and the whole covered with cotton held in place by an adhesive strap or bandage. The dressings were changed once or twice in twenty-four hours. The applications, particularly the first, were followed by slight burning and prickling sensations, which, however, were never severe. No inflammation was pro-

duced by the drug, and in twelve of the sixteen cases the results were excellent, the surface of the ulcer becoming healthy and the discharge of pus checked by the third or fourth day, so that simple dressings were sufficient to produce cicatrization. In five cases the effects were not so prompt, but even in these the duration of treatment was shorter than with the methods usually employed.—*Internationale klinische Rundschau*, January 5, 1890.

**Operation for the Deformity of Prominent Ears.**—In the *Annals of Surgery*, January, 1890, PROFESSOR KEEN describes a new operation which he has recently performed for the common deformity of prominent ears. The operation consisted in removing from the long axis of the posterior aspect of the auricle a long oval piece of skin, the cartilage being laid bare by the dissection. A strip of cartilage of the same length, but narrower and V-shaped on cross section, was then removed, taking great care not to cut through the skin on the opposite side. In the left ear three catgut sutures were introduced through the cartilage in addition to those in the skin. On the right side reliance was placed entirely on the sutures through the skin. The result was equally satisfactory on either side. The two operations, performed at the same time, were attended with very free bleeding, which, however, was easily controlled. The stitches were not removed until the tenth day. The result was perfectly satisfactory.

**Edema as a Symptom of Pneumonia.**—DR. STEMBO, in the *Berliner klinische Wochenschrift*, No. 40, 1889, calls attention to the occurrence of fugitive oedema in the course of acute diseases as an indication that pneumonia is about to set in. The oedema appears usually twelve to twenty-four hours before the physical signs of pneumonia. It is not always distinct, and often it is only by the closest attention that it can be detected, and that usually on the lower lid. It is more marked the weaker the patient, the longer the primary disease has lasted before the onset of the pneumonia, and the higher the temperature in the course of it; whilst a free use of antipyretics is not without influence in preventing it. Further, it is more evident on the side corresponding to the pneumonia, or, indeed, may be confined entirely to it. In children, and in weak and unconscious persons, the oedema is found on the side or in places which are most dependent. It often passes away in twenty-four to thirty-six hours, and seldom remains after three or four days. If it remains longer and cannot be removed by proper remedies, it is of grave import. That it is not due to renal complications is shown by the absence of casts in the urine, while only in a few cases are traces of albumin present. Stembo gives three examples out of a number of cases in which he has observed this symptom. The first was a child, twenty months old, suffering from enteric fever. On the tenth day slight oedema, especially of the right side of the face, but of the whole body as well, was observed. The temperature was  $104^{\circ}$ , pulse 148, and respiration 56. Extensive rhonchi were heard over the lungs, but no bronchial breathing; and there was no dulness. Next day dulness showed itself in the two lower lobes of the right lung with bronchial breathing. On the fourth day from this the oedema had gone,

and two days later the lung had cleared up. In the second instance, that of a woman of fifty-five, suffering from typhus, oedema of the face appeared on the eleventh day; the same evening pneumonia of both lower lobes set in, and death followed in two days. The third case was one of bronchitis in a seven-months' old child. After seven days capillary bronchitis occurred; on the fifteenth day oedema of the face and dorsum of the feet appeared, followed the succeeding morning by catarrhal pneumonia of the left side; here the oedema began to disappear in three days, and was entirely gone before the pneumonia cleared up. This phenomenon is explained by the observer as mainly due to the weakness of the heart which takes place in illness of long standing. The onset of the pneumonia increases the work of the enfeebled organ, and its temporary failure is shown by the fugitive oedema.—*The Practitioner*, January, 1890.

**Pseudo-angina Pectoris.**—DR. DRESCHFELD, of Manchester, divides pseudo-angina pectoris into the hysterical, neurasthenic, gouty, and gastric forms, and the form due to excessive use of tobacco. According to the author, hysterical pseudo-angina pectoris is distinguished from true angina by the following points:

1. The age of the sufferer. Persons suffering from hysterical angina are young, as a rule, but *true* angina may occur in young females.

2. The attacks occur not after violent exertion, but often without a palpable cause, and in some at regular intervals.

3. The radiation of the pain is along the sternum and along the insertions of the diaphragm at the back. There is often marked hyperesthesia of the skin over the left mamma, where there is occasionally a distinct hysterogenous zone.

4. There is almost always marked dyspnoea, and the vaso-motor phenomena are very prominent.

5. The patient shows a great deal of excitement, and there is not the anxious expression of countenance characteristic of true angina.

6. The coexistence of other hysterical symptoms, such as hemianesthesia, contraction of the field of vision, hystero-epileptic attacks, etc.

7. The absence of any signs of heart disease.

Dr. Dreschfeld has seen within the last three years several well-marked cases of the neurasthenic variety, the prominent and characteristic features of which are as follows:

1. The attacks come on without any muscular exertion; in one case they came on almost every morning on rising, and in another case after worry or mental trouble.

2. The attacks are short. The cardiac pain is not very great, but there are marked pallor and irregularity of the pulse which often last for days.

3. The symptoms improve on walking or other slight muscular exercise.

4. The attacks are often either preceded or followed by insomnia.

In the form caused by tobacco the anginal attacks are preceded by an irregular, occasionally intermittent, pulse, by palpitations which persist for some time, and in the attack itself there is pain, usually limited to the heart, and great oppression. The attack is followed by pallor and sweating, and the pulse may then become

slow, and show increased arterial tension, or remain quick and intermittent for some time.

The symptoms disappear as soon as the patient gives up smoking. In considering this form of angina, one has, however, to bear in mind that occasionally excessive smoking may lead to atheroma and to affections of the myocardium and valves of the heart, and thus true angina may occur in chronic nicotinism.

In gout we often meet with true angina, yet pseudo-angina does occur, and here again the absence of cardiac hypertrophy and of atheroma will assist us in the differential diagnosis. The attack is characterized by a more limited pain over the heart, by general vaso-motor disturbances, and especially also by an irregular and intermittent pulse, which may last for many weeks or even months.

Gastric and intestinal affections produce anginal attacks in a reflex manner. Palpitations, an intermittent and irregular pulse, with more or less dyspnoea and general discomfort, are often noticed in dyspeptic persons and in affections of the liver. Occasionally, however, we have in these diseases pseudo-anginal attacks.

These attacks are characterized by the following features: They come on after meals; there is often epigastric pain, with associated pains in the back from the fourth to the sixth dorsal nerve; the anginal pain is precordial, rarely substernal, and not so severe as in true angina; the pulse is irregular; there is pallor, often with profuse sweating. The attack usually lasts several hours.

—*The Practitioner*, January, 1890.

**Causation and Treatment of Rickets.**—KASSOWITZ has recently put forward at some length his views on the etiology of rickets. The old theory of a deficiency of lime salts in the food has already been given up, though it is admitted that unsuitable food and chronic diarrhoea may keep up the existing disease. Pathology shows us that the bones are not simply deficient in lime, but that a condition of inflammatory hyperæmia exists in the affected parts. This is the essential element of rickets. As regards the theory that disturbed digestion is the cause of rickets, statistics from Vienna by Kassowitz, and from Christiana, Munich, and Kiel, by other authors, prove that rickets is most prevalent in the spring, reaching its maximum in May and June, and then declining to its minimum in November, whereas digestive disturbances are most prevalent in summer and autumn. Statistics also show the evil of close confinement in winter. A long residence in closed rooms, and the breathing of impure air, seem to be the most potent factors in the causation of rickets. Hence the rapid recovery on removal of patients to the seaside or mountains. If this hygienic treatment cannot be adopted, help must be given in other ways. Children should be sent out properly clad into the fresh air daily. Lime salts should not be given—ordinary food contains plenty of lime—nor should starchy foods be restricted and a meat diet advocated; the former are by far the most suitable for children. Acting on Wegner's discovery that phosphorus in small doses restricts the formation of vessels in the growing bones of young animals, Kassowitz advocates its exhibition in cod-liver oil as a means of overcoming the hyperæmia of the bones. The dose of phosphorus given is  $\frac{1}{150}$ th of a grain in a teaspoonful of oil. This

treatment is already in use, and deserves a still more extensive trial. But, after all, hygienic measures must take the first rank in importance, for the disease is plainly one of defective hygiene.—*British Medical Journal*, January 11, 1890.

**The Use of Calomel in Phthisis.**—DR. DOCHMANN employs calomel in the treatment of pulmonary phthisis, particularly in the early stages, and claims that his results are good. He prescribes it in pills according to the following formula :

R.—Calomel . . . . .	8 grains.
Pepsin . . . . .	50 "
Tincture of opium . . . . .	30 drops.
Ext. of phellandrium, sufficient quantity.—M.	

Make into 60 pills.

On the first day of treatment 12 pills (2 pills every two hours) are to be administered; on the second day 10 pills; on the third day 8 pills. After this the patient may take 6 pills daily, with occasional periods of intermission if not well borne. If haemoptysis occurs, ergotin should be added to the pills; if cough is violent, extract of hyoscyamus.—*Prager medicinische Wochenschrift*, January 22, 1890.

**An Application for Burns.**—NIKOLSKI employs the following mixture as an external application in burns of the first and second degrees :

R.—Tannic acid . . . . .	of each 10 parts.
Alcohol . . . . .	
Ether . . . . .	80 " —M.

—*Deutsche medicinische Wochenschrift*, January 16, 1890.

**Incompatibilities of Bismuth Subnitrate.**—Subnitrate of bismuth is frequently prescribed in mixtures with bicarbonate of sodium, the combination of the two causing a slow effervescence, which sometimes bursts the bottle containing them. Again, the subnitrate with mucilage of tragacanth forms in a few hours a thick clot, which will hardly pour from a bottle. Both these results are explained by the fact that subnitrate of bismuth, though basic in constitution, is acid in reaction, and readily parts with its acid, especially in the presence of an alkaline carbonate. With bicarbonate of sodium and water, the subnitrate changes to carbonate, nitrate of sodium being formed and carbonic acid liberated. It is obvious that in such a mixture a patient would be taking mainly carbonate of bismuth and nitrate of sodium, the important antacid properties of the sodium salt being lost. For these reasons it is best to prescribe carbonate of bismuth, which is compatible with alkaline carbonates, does not thicken mucilage, and from its comparative lightness remains longer in suspension than the subnitrate. The following is a very satisfactory mixture :

R.—Carbonate of magnesium . . . . .	of each 15 grains.
Carbonate of bismuth . . . . .	
Tincture of nux vomica . . . . .	5 minims.
Chloroform water (Br.) . . . . .	1 fʒ.—M.

To be taken in one dose.—*Illustrated Medical News*, January 25, 1890.

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**DELIVERY BY UTERINE EXPRESSION.**

THE employment of pressure on the fundus of the uterus through the abdominal wall, to expedite a tedious labor, is a custom as old as the world. Dr. Engelmann, in his most interesting and valuable work, *Labor Among Primitive Peoples*, describes how it is resorted to in some form in almost every labor among uncivilized races, and in our own time it is well known that midwives in the far East resort solely to external pressure in conducting labor. Although often practised with seeming brutality, which must surely have been a not infrequent cause of death, yet its widespread and perhaps instinctive employment suggests that the method is not wholly devoid of usefulness. Bearing in mind the danger of rupture of the uterus and other dangers consequent to its employment, it should not, we think, be totally excluded from the obstetric procedures of the present day. The older authors since Albucasis and Paré have recommended light pressure over the fundus to hasten delivery, and no obstetrician will question the judicious application of the Crédé method of placental delivery. The same may be said of pressure through the abdominal wall to assist the after-coming head through a normal and even contracted conjugate, as has been recommended by Martin, Charpentier, and others.

In 1867 Kristellar, and in 1872 Suchard, went so

far as to advise the employment of uterine expression to dilate the cervix and overcome spasmodic contraction of the os. The verdict of the profession, however, is that such a procedure is dangerous. To terminate a tedious labor forceps or version is certainly more rapid and less harmful. Nevertheless, a case reported by M. Grynfeltt, in the *Gazette Hebdomadaire des Sciences Médicales*, clearly demonstrates that circumstances may arise when it may be necessary to "push the foetus out of the uterus instead of extracting it" (Barnes). Grynfeltt saw the case referred to in consultation. A multipara, in labor thirty-nine hours; L. O. A.; prolapse of left arm had prevented engagement of the head; os completely dilated; membranes unruptured. While explaining to the family the necessity of performing the operation of version, the membranes suddenly ruptured, the cord prolapsed, and the head entered the pelvic cavity. Forceps were not at hand, and to save the life of the child uterine expression was quickly resorted to, the two hands grasping the fundus, thumbs in front, as in placental expression after Crédé. In two minutes the child was delivered alive, without subsequent discomfort to mother or infant.

Similar expression has been successfully employed in the management of miscarriage. In reckless hands the method is not devoid of danger, yet employed with ordinary skill and intelligence it deserves a place in obstetric practice to meet the not uncommon emergency described.

**THE MALARIAL HÆMATOZOON.**

AMONG those who have contributed to our knowledge of malarial infection the name of Laveran will always be preëminent, notwithstanding the fact that in the bibliography of the subject it has to be sought for among a host of others. A discovery is no sooner announced than it is subjected to the most rigid scrutiny, and perhaps added to or subtracted from until the discoverer may think himself fortunate if the entire credit of his research has not been divided by numerous investigators who have done little more than follow in his footsteps. The thoroughness of Laveran's first investigations was such as to preclude them from this fate, and, therefore, the work which they suggested to others was little else than confirmatory. Notwithstanding the almost unique fact of Laveran's undisputed claim to priority in this matter, it is, perhaps, not too much to say that during the last five years many hundreds of

medical students have carried away with their diplomas the conviction that their medical teacher who had given such brilliant demonstrations of the *plasmodium malariae* was the real discoverer of the parasite.

Such an error might be due to no actual fault on either side, but solely to the lazy constitution of the average mind, which hates investigation. For such reasons we welcome Laveran's latest communication (*Archives de Médecine expérimentale et d'Anatomie pathologique*, January 1, 1890), in which he discusses: 1, the nature of the malarial parasite; 2, the manner in which it gives rise to the symptoms of malaria; 3, the technique of its study.

The question whether the well-known appearances of malarial blood are due to a single polymorphous parasite he answers in the affirmative, and for the following reasons: First, it is highly improbable that the different symptoms of malarial poisoning could be due to several parasites of different species, for these symptoms are constantly interchanging, while the unity of paludism, both from the clinical and anatomical points of view, is unquestionable. Secondly, since its discovery, the malarial organism has been proved to be one of a large family of polymorphous haematozoa, some of which bear the closest resemblance to it. This is particularly the case with the haematozoa of birds, which have been so closely studied by Danilewsky. Laveran was so struck with this resemblance, although he points out certain differences between them, that he endeavored to propagate the plasmodium in the blood of birds, but without success.

The following résumé embodies the chief facts concerning the malarial haematozoon, and leads irresistibly to the conclusion that it is the morbid agent of paludism in all its varieties:

1. The parasite has been found in all countries in the blood of those affected with the malarial poison, and the numerous descriptions of its appearance are remarkable for their identity.

2. The parasite has never been found in the blood of those not affected with the malarial poison.

3. The development of the parasite is intimately connected with the production of melanæmia, which is the characteristic malarial lesion.

4. The salts of quinia cause the parasite to disappear from the blood, and this takes place synchronously with the cessation of the fever.

5. Malarial disease has been transmitted from one person to another by injecting into the veins of a

non-malarial individual a small quantity of blood containing the parasite.

The mode of life of the malarial organism outside of the human body is as yet unknown, and it seems probable that its aspect under such circumstances is different from that which it presents in the blood of man. It is possible that, in one phase of its existence, it may be the parasite of some other animal or of a plant, and Laveran suggests the possibility that the mosquito may play a rôle in its transmission.

The manner in which the haematozoon gives rise to the symptoms of malarial poisoning is a question of great interest. Laveran believes that its action is both vital and mechanical. In virtue of the former it destroys the red corpuscles, and the extent of this destruction is shown by the anaemia and the accumulation of pigment in the vessels and tissues.

The nervous symptoms—such as the chill, fever, headache, etc., are due to irritations of the cerebral nervous system.

The failure of all attempts to cultivate the malarial organism has been advanced as an argument against its parasitic nature, but no better success has attended the culture experiments in the case of the filaria sanguinis.

The haematozoon *malariae* does not belong to the class of schizomycetes, and, therefore, it is not surprising that its behavior is different from that of micrococci and bacilli.

These are the essential facts concerning the malarial germ as set forth by its discoverer. They are of the greatest practical interest, for already, in numerous instances, the diagnosis of some of the most obscure forms of malarial poisoning has been made by the detection of the parasite which is its constant attendant.

## NEW INVENTIONS.

### SCISSORS FOR TENOTOMY.

BY EDWARD JACKSON, M.D.,  
PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC.

THE ordinary scissors, with ring handles, require for any given position of the scissors that the hand shall be brought into a certain position; there is only one relation of hand and scissors that gives the operator good control of his instrument. When doing a tenotomy of one of the recti muscles of the eye, to get a smooth cut in the proper direction the blades of the scissors must have a certain position and direction, relative to the insertion of the tendon and the eyeball. But the eyeball is capable of free rotation; and does rotate often in the course of

the operation. And with the ring-handled scissors, to keep just the right relation between the blades and the tendon, each movement of the eye must be followed by a corresponding, but greater, movement of the hand and arm. And no matter how well you may arrange your patient and plan the little operation, you will find before it is over that you are getting in your own light, or your fingers or the assistant's, or the patient's head, is very much in the way.

This difficulty is largely avoided by using scissors with spring or forceps handles, like those shown, two-thirds the natural size, in the accompanying cut. These



can be readily grasped, and satisfactorily used with the hand in any one of many positions with relation to them. So that it is possible to adapt the blades to any position of the eyeball, without much change in the position of the hand.

The scissors represented, which have been made for me by Charles Lentz & Sons, of Philadelphia, conform in certain other important respects to the requirements of a tenotomy operation. The joint is particularly broad and firm, to prevent over-riding; yet the blades are sufficiently delicate. The blades are but slightly curved, but this curve is near the point, where it is needed. The points are as blunt as is compatible with easy introduction, the blades are not unnecessarily long, and are so formed that the line of the cutting edge passes near the rivet, and a comparatively slight spreading of the points gives sufficient length of blade to sever the whole width of the tendon, while they exert very little of the forward thrust that tends to push the tendon off the hook, allowing it to escape uncut.

## CORRESPONDENCE.

### *INTESTINAL ANASTOMOSIS.*

To the Editor of THE MEDICAL NEWS,

SIR: It seems to me that the subject of intestinal anastomosis should be treated with great care. Senn's numerous operations<sup>1</sup> on animals were made, not only to ascertain if the operation could be made successful for the hopeless condition of complete stenosis, but also to find what method would be most surely successful.

The result of his laborious experiments, laborious because conducted with extreme antiseptic precautions and with a variety of material, may be told in a sentence:

"Partially or completely decalcified bone plates hardened in alcohol, remain firm for a sufficient length of time to answer the purpose of retentive measures until firm adhesions have formed between the serous surfaces held by them in approximation. In a few days the disks completely disappear by softening and disintegration. The plates, when properly fixed in their places and tied together with sufficient firmness, not only coapt an extensive area of serous surface, but they at the same

time secure perfect rest for the parts it is intended to unite until firm adhesions have formed."<sup>1</sup>

This is the whole matter in a nutshell; the fewest number of apposition sutures, not more than four in the plates; this to save time and thus prevent shock; coaptation of an extensive serous surface which secured perfect rest of the parts to be joined for a time sufficient for union.

Senn's numerous operations on animals, with a number on human subjects, show magnificent results. If, after a suitable series with the quickly softening catgut plates or yielding rubber rings an equal success is reported, one might be willing to trust them for what at best is an appalling necessity.

To Dr. Senn the trouble of having prepared one or ten bone disks is not the question; but, What is to be the result for a human life? Standing at his side and seeing him insert the plates in a human intestinal tract the question comes with tremendous force, Will the coaptation be perfect, or will there be a leak and peritonitis and death? Can it be believed that a segmented flexible rubber tube, as has been recently described, impinging only at its convexity will as surely resist tympanitic and other pressure as will the broad firm grasp of disk surfaces?

The operation is a new one; a great thinker has wrought it out with almost infinite pains; it offers relief to a class of cases who before were without hope. Why be in such haste to improve upon it before it is fairly tested by surgeons generally? IRA MANLEY, M.D.

MARQUETTE, WISCONSIN.

## DETROIT.

To the Editor of THE MEDICAL NEWS,

SIR: At a recent meeting of the Detroit Medical and Library Association, Dr. Flinterman presented a very interesting specimen, embracing the two kidneys from an individual who died of uræmic poisoning. The kidneys were very large and their substance was almost completely obliterated by the formation of numerous cysts.

Dr. Mills read a paper on "Heart Diseases," which called forth a prolonged debate.

At a subsequent meeting, Dr. Rowley exhibited a very rare specimen, secured post-mortem, which showed the two kidneys united by a fleshy band, and giving the entire mass a horseshoe shape. The mass uniting the two kidneys will be examined microscopically to determine its histological structure.

Dr. Campbell exhibited a scirrhus of the lesser curvature of the stomach with perforation of the posterior wall. Death in this case was sudden, and presumably due to perforation and shock.

Dr. T. A. McGraw has recently returned from a five-months' sojourn abroad, and has resumed work in the college. He was banqueted a few evenings since by the students and members of the faculty.

## THE CONTAGIOUSNESS OF INFLUENZA.

To the Editor of THE MEDICAL NEWS,

SIR: The following observations bearing upon the question of the purely contagious nature of the recent

<sup>1</sup> Experimental Surgery, Senn, page 422.

<sup>1</sup> Loc. cit., pp. 446 to 455.

epidemic of "grippe," may be of some interest to your readers:

Fearing an attack of the prevalent influenza might prove disastrous to many of the invalids at the Adirondack Cottage Sanitarium, the place was quarantined as soon as the epidemic appeared in the neighborhood. The sanitarium is only a mile from the village, and at this date, January 30th, no outbreak of the disease has taken place there, while it has attacked the great majority of all the people living in the surrounding country, as well as the visitors at the hotels and boarding-houses. I am not aware of any other case being on record where quarantine has proved in any degree successful in averting epidemic influenza.<sup>1</sup>

E. L. TRUDEAU.

#### **COMBINED METHODS OF TREATING AN ASPHYXIATED INFANT.**

To the Editor of THE MEDICAL NEWS,

SIR: On August 10, 1889, I was asked to aid a midwife in the case of Mrs. C., near Wayne. Upon arrival the head was found to be well down and the parts in good condition, there being no real impediment to the delivery which, without instrumental aid, occurred within ten minutes. The mother, well developed and healthy, was not lacerated, the placenta was slightly adherent to fundus. The infant—male, eight and one-half pounds—was pallid (not cyanosed) with normal pulse and both chest-walls collapsed. A few moments after birth it elevated the eyelids, rolled the eyeballs as if observing the surroundings, and then closed the lids. Afterward it remained limp and pallid, with as good a pulse and fair a temperature as the condition warranted, until respiration took place, about an hour later. All the usual methods employed to excite respiration were thoroughly tried, but without avail—the lungs remained collapsed. After fifty minutes spent in this endeavor, I essayed, and readily succeeded in intubating the larynx.

The following are the details, so far as they relate to the modification of the method in vogue in France: A nozzle of my obstetrical syringe was inserted into the end of the male catheter, the air with which the syringe was filled being drawn each time through a thick pad of antiseptic gauze moistened with twelve per cent. hydrogen dioxide. The air was cautiously pumped into the lungs, the arms at the same time being elevated. On withdrawing the nozzle, the lowering of the arms and pressing them against the sides expelled the air. Thus the two methods, of Sylvester and insufflation, were employed simultaneously. In twenty minutes the respiration became automatic. To-day the child is apparently healthy in all respects.

Among some 900 cases at full term, the above is the only instance in which, when the case demanded it, some one of the usual methods did not suffice.

G. E. ABBOT.

BRYN MAWR, November 29, 1889.

#### **NEWS ITEMS.**

**Tri-State Sanitary Convention.**—Arrangements have been completed to hold a Tri-State Sanitary Convention at Wheeling, W. Va., February 27 and 28, 1890. Rep-

<sup>1</sup> A note received February 8th from Dr. Trudeau states that no case of "la grippe" has yet occurred at the Sanitarium.—ED.

sentatives will be present with papers and addresses from Pennsylvania, West Virginia, and Ohio. The object of the convention is to consider the question of floods and their results from a sanitary standpoint, and the best methods of managing the sanitary interests of a given community after such a calamity.

Owing to the mutual relations held by these three States, with reference to large rivers, and the numerous towns that are annually affected by floods, it has been thought wise to hold a convention for studying how best to manage the sanitary interests of cities and towns so affected.

Every person interested, directly or indirectly, in this important subject is earnestly requested to be present to assist in discussing the papers, and to add whatever information he can to the solution of these practical and most important questions, concerning as they do the health and lives of thousands of citizens of these three great commonwealths annually.

Reduced rates of transportation have been secured over all lines controlled by the Central Traffic Association in the three States named, on the certificate plan. Application has been made to the Trunk Line Association for like favor.

**Stevens' Laboratory Prizes.**—The following has been received from the Stevens' Laboratory, Maine:

From a desire to verify his own researches as to the causes of failing nutrition in aged organisms, the undersigned hereby offers three cash prizes of \$175, \$125, and \$100 for the best three comparative demonstrations, by means of microscopical slides, of the blood capillaries in young and in aged tissues, canine, or human.

By young tissues (canine) are meant tissues from animals between the ages of one and three years.

By aged tissues (canine) are meant tissues from animals not less than twelve years of age.

By young tissues (human) are meant tissues from subjects between the ages of ten and twenty years.

By aged tissues (human) are meant tissues from subjects not less than sixty-five years of age.

While a preference will be given to demonstrations from human tissues, it will be possible for work in canine tissues to take the first, and, indeed, all of the prizes. But of two slides equally well done in all respects, one canine the other human, the latter will be given the preference. Canine tissues should be from large animals.

Twelve slides from young and twelve from aged tissues must be submitted by each competitor, together with a full description of the subjects, methods pursued, and every detail and circumstance which is likely to throw light upon, or account for any peculiarity. The slides are for comparison as to the condition of capillary circulation, the young with the old, and should be in numbered pairs, or groups from the same kind of tissue. The term tissue is used in a general sense—e. g., pulmonary tissue, hepatic tissue, renal tissue, osseous tissue, muscular tissue, nerve tissue, alimentary tissue, etc.

No particular schedule of methods for injection, or staining, will be insisted upon, and no more definite directions or explanations will be given.

The slides, carefully packed and boxed, together with descriptive manuscript, can be sent by mail.

It is stipulated that the demonstrations which receive

the prizes shall become the property of the subscriber, for publication. All others will be returned, if desired.

No pseudonyms required. Accompany slides, in every case, with (real) name and address. Unless of known reputation as a biologist, a reference is respectfully solicited.

**Reservation:** no award will be made unless work of at least ordinary merit is submitted.

This offer is made on the first day of January, 1890, and will remain open until the twentieth day of August, 1890.

Slides and manuscript will be examined and receipted for as soon as received.

The prizes will be adjudged on the first day of October, 1890.

These nominal prizes are offered less in expectation of results from the money as an agent, than in the hope that the offer may furnish a *point d'appui* for really needed work. Besides professional observers and students, there are in the United States a large number of amateur microscopists of acute vision and undoubted talent, who are at present playing with microscopes as with toys, merely to see the curious or pretty things. The time has come to concentrate observation upon the one proper object of biology, viz., the renovation and prolongation of human life. Address C. A. Stevens' Laboratory, Norway Lake, Maine.

**The License to Practise and Medical Testimony.**—A recent decision in France states a general point of law affecting the medical profession in regard to its duties to the State, where a license to practise is issued. To the question, May a physician refuse to aid a coroner or other public official? the French decision says that the physician is in duty bound to respond to the summons of all judicial tribunals for the investigation of crime. No person may practise medicine or surgery save under authority of the law which prescribes what shall be his qualifications. This law, by virtue of which alone he has his legal status and existence, declares certain functions which none but the physician shall perform. From these legal premises the inference is inevitable that the law must look to the physician for the performance of those functions when a medico-legal investigation is required, as the physician is licensed for a public duty as well as for a private vocation. In other countries and states, where a definite license to practise is not granted, some other point of law must be found for the coercion of expert medical testimony, or for the creation of a special class of medico-legal experts.

**Medical Lake, in the State of Washington.**—Medical Lake, near the city of Spokane Falls, Washington, is a body of water to which many Western people are resorting to bathe, on account of its alleged efficacy in rheumatism and skin diseases. One of its properties is that it forms a lather when violently agitated or when rubbed on the skin. No fish or other varieties of life are found in its waters, and its appearance is muddy and repulsive. A town is springing up near the borders of the lake, to which excursion trains are to be run during the summer season.

**Adulterations with Terra Alba.**—The clay-eaters of the North differ from those of the South in the fact that they

do not know that they are taking terra alba, and that it comes to them variously flavored with wintergreen, peppermint, etc. It is asserted by the *National Druggist*, as the result of a special investigation in connection with a lawsuit, that lozenges are made in enormous quantities of little else but white clay. The clay is compressed in moulds, and bound together by a little gum or gelatin, and immersed for a few moments in a syrupy bath containing the required flavor. This makes a very cheap form of confection which is largely consumed by children. The adulteration or substitution is also carried on to some extent in the manufacture of caramels; but in the case of the cheap lozenges the proportion of clay used is the highest possible consistent with their maintenance of shape. The Portland Board of Trade *Journal* has stated that there is an annual importation of terra alba amounting to 6000 tons, and that the only considerable use made of it is in the adulteration of the cheaper grades of candy.

**The New York Charities in 1889.**—The Annual Report of the New York State Board of Charities shows the reported amount of gratuitous medical and surgical relief by hospitals and dispensaries to have been 525,000 patients, of which 26,000 were treated at their homes, at an expenditure of \$670,000. The estimated number of insane in the State was about 20,000, or 3.33 per thousand, on the basis of 6,000,000 as the population of the State. The report contains a protest against the erection by the State of any more buildings for the concentration of the insane, saying that the day of huge asylums has gone by, and that it is an extravagant misuse of funds to construct retreats and hospitals which cost \$2500 per capita for shelter alone. It adds the statement that the weight of opinion among eminent alienists is adverse to the herding together of large numbers of insane persons. The entire receipts of the year for charitable and correctional purposes were \$16,000,000, and the expenditures were \$14,800,000; the total number of inmates of charitable and reformatory institutions was 67,780. The invested values of all institutions are over \$57,000,000, of which \$38,000,000 belong to incorporated benevolent associations.

**A Hospital at Atlanta.**—The citizens of Atlanta have determined to build a hospital as the most fitting memorial to the late Henry W. Grady, the favorite statesman of Georgia. It will, when built, bear the name of the Henry W. Grady Hospital.

**Vacancies in the U. S. Navy.**—In one of the circulars drawn up to explain a Navy reorganization bill before the Senate, an argument is based upon a comparison of the surgeons of the Army and Navy. In the Army there are always a number of applications for each vacancy; in the Navy there are several vacancies and no successful applicants. Last summer Secretary Tracy convened an Examining Board at the Navy Yard at Brooklyn, for the filling of nine vacancies among the naval assistant surgeons. Until a recent date no satisfactory candidates had been secured. A few candidates presented themselves, but could not stand the physical or other examinations. A Board has also been in session a longer period at San Francisco, by means of which one or two surgical vacancies have been filled. From this and

similar indications, it must be inferred that the young medical men who desire to secure a governmental surgeoncy are attracted to the Army in preference to the Navy; and it seems desirable that by new legislation the allurements of the latter service shall be enhanced by better rank, or better pay, or by both.

**The Alvarenga Prize.**—The College of Physicians of Philadelphia will award the Alvarenga Prize, consisting of one year's income of the bequest, to the author of the best memorial or unpublished work on any branch of medicine, the College reserving to itself the right to reject all essays not considered worthy of the prize, and that they will be received by the Secretary until June 1, 1890.

**The Profession in France.**—The number of practising physicians in France has been, of late years, steadily on the decrease. In that country there are, in accordance with the law of March 10, 1803 (19 Ventose, year XI.), two kinds of physicians: the doctor, and the health-officer—officier de santé—the latter corresponding to the English apothecary. The doctor, who, after a long course of study, has passed a rigid examination, has the right to practise in all the branches of his profession and in all parts of the country, whereas the officier de santé cannot practise outside of the department in which he has received his license, and is decidedly restricted in the exercise of his profession, being debarred, for example, from performing a major operation, unless in the presence and under the control of a doctor. It has been proposed by one of the Deputies, M. Chevandier, a physician, to abolish the officier de santé on the facetious ground that as no one is half-sick—demi-malade—there is no occasion for a half-doctor—demi-médecin. The proposition has called out a decided opposition from one of the French newspapers, which calls attention to the decrease in the number of practising physicians above mentioned, this decrease affecting both branches of the profession. For example, there are in France, at the present time, 29,795 communes destitute of physicians! The diminution is most marked in the case of the inferior branch of the profession, which numbered 7500 in 1847 and 3000 in 1889. In the article referred to, no attempt is made to account for a state of affairs which seems most anomalous to those whose country enjoys or suffers from an *embarras de richesse* so far as medical men are concerned.

**The Indian Medical Journal.**—By the death of Surgeon Charles Washington Deakin, of the Bengal Army, the *Indian Medical Journal* loses its editor and publisher, and it is said that the journal itself comes to an abrupt conclusion. Dr. Deakin died of enteric fever, in the Punjab, November 17, 1889, aged forty years. Although he had been less than ten years in the medical service, he left a brilliant record for surgical skill in several of the provinces of India.

**Co-operation in Medicine.**—A bill has been introduced into the New York Legislature, incorporating the Co-operative Medical Association of Brooklyn, with a capital of \$1200. Its object will be to supply cheap attendance by means of co-operative physicians of a like grade. It is designed to meet the needs of the poorer class of

patients who do not wish to resort to institutions of charity.

**Examinations for Appointment in the Medical Corps of the U. S. Army.**—An Army Medical Board will be in session in New York City, N. Y., from May 1 to 31, 1890, for the examination of candidates for appointment in the Medical Corps of the United States Army, to fill existing vacancies.

Persons desiring to present themselves for examination by the Board will make application for the necessary invitation to the Secretary of War, before April 1, 1890, stating the place of birth, place and State of permanent residence, and enclosing certificates based on personal knowledge from at least two physicians of repute, as to professional standing, American citizenship, character and moral habits; also, statement of service in hospital from the authorities thereof is desirable. The candidate must be between twenty-one and twenty-eight years of age, and a graduate from a *regular medical college*, as evidence of which his diploma must be submitted to the Board.

Further information regarding the examinations and their nature may be obtained by addressing the Surgeon General, U. S. Army, Washington, D. C.

The pay of a first lieutenant of cavalry, or of a medical officer during the first five years of his service is \$1600 per annum, or \$133.33 per month. At the expiration of his five years of service he becomes, by virtue of that fact, a captain, and his pay is that of a captain of cavalry, \$2000 per year, increased by ten per cent. for his years of service, viz., \$2200 annually, or \$183.33 monthly. At the end of his tenth year of service this rate of pay is increased by the service-addition to \$2400 annually, or \$200 per month, and after five years more the service-addition makes his pay \$2600 annually, or \$216.67 per month. If he continue in the rank of captain, at the end of twenty years of service his monthly pay becomes \$233.33; but about this time promotion to a majority is usually obtained, and a major's annual pay of \$2500, with forty per cent. added, makes the monthly pay of the major and surgeon \$291.67. Subsequent promotion, investing the individual with the rank of lieutenant-colonel, colonel, and brigadier-general, augments the monthly pay respectively to \$333.33, \$375.00 and \$458.33.

#### OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY, FOR THE WEEK ENDING FEBRUARY 8, 1890.

JONES, W. H., *Surgeon*.—Ordered to the U. S. S. "Swatara." HUDSON, A., *Medical Director*.—Died, February 7th, at Mare Island Hospital, California.

 **THE MEDICAL NEWS** will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.

Local papers containing reports or news items should be marked. Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

All communications relating to the editorial department of the NEWS should be addressed to No. 1004 Walnut Street, Philadelphia.